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East Europe Report

ECONOMIC AND INDUSTRIAL AFFAIRS

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11 February 1985

EAST EUROPE REPORT
ECONOMIC AND INDUSTRIAL AFFAIRS

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INTERNATIONAL AFFAIRS

USSR, GDR ROBOTRON COMBINE INCREASE IMPORT, EXPORT TRADE VOLUME

East Berlin NEUE TECHNIK IM BUERO in English Vol 28 No 4 1984 pp 100, 101

[Article by Dipl. Ok. R. Jordan, Berlin]

[Text]

The trade relations of VEB Kombinat Robotron with the USSR have been developing successfully with a steadily increasing export and import volume. In recent years exports to the Soviet Union have quadrupled and currently account for about $\frac{2}{3}$ of the total exports of VEB Kombinat Robotron. This is mainly attributed to the fact that prolific cooperative relations between the USSR and the GDR in the field of computer technology have existed for many years. The EDP system EC 1040, for instance, marked the beginning of exports of ESER technology (ESER = Unified Computer System of the Council of Mutual Economic Assistance) to the USSR in 1974, but by 1984, the EDP System EC 1055.M accounts for half of Robotron's total export volume to the USSR.

The advantages of socialist economic integration, whose conception is laid down in the ESER Agreement of 1968, come into full play in the export, start-up and application of EDP systems. The peripheral units for the central processor are imported by the Soviet users directly from those socialist countries that specialize in their production, obviating the involved procedure of re-exporting them by the maker of the central unit as part of the overall system.

The Soviet after-sales organization for ESER technology (Soyus EVM Complex) carries out the work of coupling central processors to peripheral units from the GDR, the USSR, Bulgaria, Hungary, Poland and

Czechoslovakia. Coupling tests of units that are not directly part of the model are also carried out to check their compatibility in the interests of the users. The 400 EDP systems EC 1040, EC 1055 and 1055.M delivered by Robotron to the USSR since 1974 demonstrate the successful cooperation between the socialist countries in the Council of Mutual Economic Assistance (CMEA). The good reputation enjoyed in the USSR by the EDP systems made in the GDR is due in part to the high reliability and on-stream ratio of the hardware. The high standard of work of the Soviet after-sales service organization also plays an important role here.

In realizing the government agreement signed between the USSR and the GDR on the implementation a technical after-sales service organization, Robotron ran the service itself, while helping the Soviet after-sales service organization to prepare for taking over the service by training the staff and supplying spare parts, tools and measuring and testing equipment. At present cooperation covers the provision of personnel and hardware for dealing with emergency situations, exchange of experience and the holding of symposia.

These frequent consultations with Soyus EVM Complex and with the users show that cooperation between VEB Kombinat Robotron and its partners in the Soviet Union is growing at a steady pace. The setting up of facilities in the USSR for repairing all components has been one of the essential conditions for raising the effectiveness of

and exporting these control computers. They are designed in such a way that the maximum down time in twenty years is two hours.

Robotron maintains close cooperative contacts underpinned by various agreements, contracts and joint working plans not only with developers and manufacturers of plants and electronic computer hardware, but also with important users in various fields of economy and research of the USSR.

They include such organizations as

- the United Nuclear Research Institute at Dubna
- the Kurtshatov Institute of Peaceful Uses of Nuclear Energy in Moscow
- the Ministry of Petroleum Industry of the USSR
- the Ministry of Natural Gas Industry of the USSR
- the Ministry of Railways of the USSR
- the Ministry of Automotive Industry of the USSR, (particularly the WAS Car Factory at Togliatti, KAMAS at Naberezhniye Chelny and Moskvitsh in Moscow)
- the State Committee of Supply for the Agriculture of the USSR (Goskomselchostekhnika)
- the State Bank (Gosbank), the bank of Foreign Trade of the USSR
- the Ministry of Finance of the RSFSR.

Mutually advantageous cooperation is constantly being extended with these major users of computer technology. This is a basic condition for the effective use of Robotron technology in the USSR and a firm foundation for continually increasing Robotron's exports.

These favourable conditions have made it possible to sign a contract this year on the application of computers in the money economy with the Moscow municipal branch bank of the State Bank of the USSR, which is to be realized in the period from 1984 to '86. The contract provides among other things for three dual computer systems of the Type EC 1055.M for the first tier. It will also be possible to link them up with each other via channel-channel adapters in order to achieve a high level of reliability making failures virtually impossible.

The second tier for the bank branches in the city and in greater Moscow is equipped with process computers Type CM 1630, to

the EDP systems that are in service in that country.

Close Cooperation with the Users

The opening of a new technical centre of VEB Kombinat Robotron in Moscow has made it possible to establish even closer relations with users in various industries. This enables Robotron to react faster and more flexibly to the Soviet market's demand.

This year, exports of CM technology on the basis of a government agreement in the field of remote sensing and exploration of the earth signed between the USSR and the GDR were launched with the delivery of control computers for image processing. This equipment from the GDR is required for processing millions of photographs taken from satellites, whose volume is growing from day to day. This work is beneficial to the economies of both our countries.

This year also saw the first deliveries of problem-oriented computer complexes within the framework of the CM agreement.

Robotron is also an important sub-supplier of equipment components to manufacturers of electronic computer hardware in the USSR.

For many years now, the GDR has been exporting printers for Soviet accounting machines and small computers, which almost exclusively use printers made by VEB Robotron Büromaschinenwerk Sömmerda.

The Robotron combine has been helping the Soviet Union to launch the production of the popular "ERIKA" portable typewriter based on a licence contract signed between the two countries to help meet the Soviet population's great demand for typewriters. Mechanical and electrical typewriters have also been exported to the Soviet Union over many years. Exports of electronic typewriters are in the pipeline.

The control computers NEVA 1 M and ENSAD 4310 used for controlling telephone communications are the result of close and fruitful cooperation. These computers were developed jointly by specialists of the Institute of Cybernetics of the Academy of Sciences of the Ukrainian SSR in Kiev, the Ministry of Posts and Telecommunications of the USSR, the Central Research Institute of Telecommunications in Moscow and VEB Kombinat Robotron. At the request of the USSR, Robotron has started manufacturing

which are connected the bank counter terminals consisting of robotron K 8924 in the 3rd tier. The trial operation is already in progress.

At present new contracts are being worked out, whose realization will last into the '90s and which will be a reliable basis for the continued dynamic development of exports to the USSR.

Imports of High Economic Significance

Imports from the USSR are also increasing steadily. Since 1972, for instance, more than 200 EDP systems of Types EC 1020/22 and EC 1035 have been imported from the USSR. They are in service at vital focal points of the GDR's national economy. The combine buys large numbers of peripheral units from the USSR for use with its own EDP systems. They include moving arm disks with capacities of 100 and 200M bytes, which are decisive for the efficiency of EDP systems.

A substantial share of the GDR's demand for copying equipment is covered by equipment from the USSR. Photocopiers are imported exclusively from the USSR. Department stores, a variety of retail and service shops are equipped with cash registers from the USSR.

The dynamic growth of the exchange of goods between the USSR and the GDR will make it possible to use increasing quantities of electronic computer technology from the USSR in all fields of the national economy of the GDR.

NTB 3268

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INTERNATIONAL AFFAIRS

GDR-USSR 1985 PROTOCOL INCREASES TRADE VOLUME TO R15 BILLION

AU121140 East Berlin NEUES DEUTSCHLAND in German 10 Dec 84 pp 1-2

[Text] Moscow (ADN)--The protocol on the goods exchange between the GDR and the USSR in 1985 was signed on Saturday in Moscow by the ministers for foreign trade, Horst Soelle and Nikolay Patolichev. It provides for another growth of foreign trade to a volume of R15 billion. This further significant increase of the mutual goods deliveries and achievements is the result of the swift implementation of the agreements between the SED Central Committee general secretary and GDR State Council chairman, Erich Honecker, and the CPSU Central Committee general secretary and chairman of the USSR Supreme Soviet Presidium, Konstantin Chernenko, of June 1984, and expresses the dynamic progress in the economic and scientific-technological cooperation in research, development and production.

In agreement with the stipulations of the economic meeting of the CEMA member countries on the highest level, the share of the goods deliveries that is based on agreements on specialization and cooperation and other measures of interpenetration of our economies continues to increase in 1985.

Thus, the deliveries of ships and electronic components fully result from specialization and cooperation agreements. The share of specialized products has also continued to increase with regard to machine tools, lifting and transportation equipment, rolling-bearings, presses and forging equipment, and chemical products. In the next year the GDR will implement comprehensive deliveries of products of the metal-processing industry and the electrotechnology-electronics sector, among other things cutting machine tools, presses, cutters and rolling-mill equipment, metal-processing strips, robots, ship's diesel engines, natural gas compressors and electronic equipment, including high- and low-voltage plants. The deliveries will also include large amounts of equipment for the open-pit mining sector, excavators, belt conveyers, crushing and grinding equipment, chemical plants, cranes, including railroad slewing cranes, as well as fishing and fish processing ships, container, refrigerating and inland water passenger ships.

The exports of the GDR combines will also include equipment for the food stuff industry, refrigerating facilities, agricultural machines and trucks, textile machines, plants for the construction and construction material industry, road-building and printing machines, communications and computing technology,

industrial and mine locomotives, refrigerator cars, and long-distance passenger cars.

The GDR will also deliver chemical products, herbicides and pesticides, x-ray films, glass and ceramic products, furniture, textile products, musical instruments, as well as sports products and toys.

The mutual trade with documentation, licenses, project planning and other forms of invisibles will be considerably increased.

In 1985 there will be continued comprehensive Soviet deliveries of energy resources and raw materials that are of particular importance for the GDR national economy, such as oil, natural gas, iron ore, manganese and chrome ore, asbestos, aluminum, metallurgical products such as tubes and sheets, ammonia, chemical products, pulp and paper, sawn timber and pulp wood, as well as cotton. In the field of the metal-processing and electrotechnological industry, the USSR will deliver, among other things, cutting machine tools, including lathes, grinding, drilling, and cutting machines, presses and forging equipment, diesel engines and spare parts, electrotechnological equipment including electric motors, transformers, cables and lines, equipment for the mining sector and metallurgy, as well as rolls and components for continuous casting plants [bandgiessanlagen] and rolling mills, lifting and transportation equipment, facilities for the foodstuff industry, air-conditioning and refrigeration technology, textile machines and equipment for the chemical and paper and pulp industry.

The comprehensive Soviet deliveries will also include wood-processing and road-building machines, excavators, pumps and compressors, as well as machines and equipment for service enterprises, printing machines, and communications and computing technology. Agricultural technology, including the necessary spare parts, as well as trucks and diesel engines for ships will complete this comprehensive range of high-quality machines and equipment.

Also next year the GDR will receive Lada automobiles, technical consumer goods, films, and pharmaceutical products from the USSR.

At their consultations the ministers for foreign trade of the two countries discussed questions of the swift and continuous implementation of the agreed volume of goods.

The festive signing of the protocol was attended by Egon Winkelmann, GDR ambassador to the USSR.

CSO: 2300/246

INTERNATIONAL AFFAIRS

BRIEFS

GDR-USSR FISHERY ACCORD--On Friday [7 December] a government agreement on co-operation in the field of fishery was signed by Dr Udo-Dieter Wange, GDR minister of Bezirk-administered industry and the foodstuffs industry, and by Vladimir Kamentsev, USSR minister of the fish industry. The ministers agreed that the accord creates favorable prerequisites for the further deepening of the collaboration of many years, particularly in research into raw material resources in fishery, in developing and producing new processing and catching equipment, in manufacturing fish products and in developing fishing vessels. [Text] [East Berlin NEUES DEUTSCHLAND in German 8/9 Dec 84 p 2 AU]

RO/RO FOR USSR LINE--The last ship from its 1984 production programme has been completed by the Warnow ship yard in Rostock. The multi-purpose, lift-on lift-off, roll-on roll-off, freighter is for the Soviet Black Sea shipping line in Odessa. Its powerful equipment enables on- and off-loading directly from on board. An additional stern ramp also enables roll-on roll-off handling. The handing over of the 18,000-ton ship brings the total of ships from the Warnow yard this year to 10 modern freighters of various types, which have been dispatched to 4 countries. [Text] [East Berlin Voice OF GDR Domestic Service in German 1000 GMT 28 Dec 84 LD]

CSO: 2300/255

ALBANIA

ECONOMIC SHORTCOMINGS CRITICIZED BY PLANNING CHIEF

Tirana ZERI I POPULLIT in Albanian 1 Nov 84 p 2

[Article by Harilla Papajorgji, chairman of the State Planning Commission:
"Real Mobilizing Plans Require a Constant Revolutionary Tempo for Their Realization"]

[Text] Studying Volume 42 of Comrade Enver Hoxha's Works

Like all his other materials, Volume 42 of Comrade Enver Hoxha's "Works" is also a great aid for the basic party organs and organizations, for the state organs and the organizations of the masses, and for every communist and worker. In this volume, although events are treated and problems raised regarding the internal and external situation pertaining to the end of 1969 and the beginning of 1970, again the lessons which derive from these analyses remain very topical. These include the problems which concern the formulation of the most scientific plans possible, and the organization of all work to put these plans into practice as well and as effectively as possible. The assimilation of these lessons that Comrade Enver Hoxha gives in this area constitutes a matter of great importance, which was also emphasized by the 9th plenum of the Central Committee of the party.

It was stressed at the 9th plenum that fulfillment of the plan constitutes the major task in realizing the objectives connected with increasing the effectiveness of the economy. The struggle for their realization takes on a new content if, as Comrade Enver Hoxha teaches us, "...we link the plans to the internal and external political situations." These constant instructions of the party, when our country is now advancing, fully supported by its own forces, take on a special meaning and importance because the imperialist and revisionist encirclement and the aggravated world situation work against and adversely influence our country and economy. For that reason, Comrade Enver points out in one of the materials in the volume, "We must come out ahead from difficult situations. This is achieved by means of a strong and sound organization, by means of all-around mobilization to fulfill and even over-fulfill our plans."

This is also a permanent instruction and task of the party. Understanding this correctly and politically, many urban and rural labor collectives are fulfilling and over-fulfilling the tasks of the plan, even if they are confronted with the difficulties and obstacles of encirclement and blockade and

with some other difficulty, and they are going with head held high to the great festival in honor of the 40th anniversary of the liberation of our fatherland. Their achievements, as well as various revolutionary initiatives, such as that of the "Enver Hoxha" tractor combine to increase production efficiency, which has been supported by many other collectives, and the many actions that have been undertaken everywhere--in industry, agriculture, construction, etc., have all served to turn the fourth quarter into a period of general mobilization and intensive work and are the meaningful expression of efforts and constant struggle by the working masses, under the leadership of the party, to stand up to the situation and to strengthen unremittingly our socialist economy.

But we cannot say that some basic party organizations, labor collectives, districts and ministries are participating in and responding to situations as they should when, even without analyses of tasks set by the 9th plenum of the Central Committee party, they continue to create deficits in the plan, as in the oil drilling enterprise in Marinze, in the extraction of rich chrome in Diber and Mat districts, in the extraction of coal in Tirana District, in the backwardness which is observed in several districts with respect to the harvesting of late crops, timely tilling of soil and especially the sowing of wheat, in the non-transport of some important commodities from some motor vehicle and railroad transportation enterprises, in the procrastination in the construction and delivery of some manufactured articles from enterprises and the Ministry of Construction, etc. A way out, in order to end the aforementioned deficits, is to raise further the level of direction and leadership of party organs and basic organizations, to mobilize and place the responsibility before the directorates and their apparatus in enterprises and cooperatives, and in the executive committees of the people's councils of districts or in the ministries.

The economic and social development of the country and the realization of objectives set by the 8th party congress for the 7th Five Year Plan require, more than ever, the discovery of internal resources and their placing at the service of the economy. For this purpose, Comrade Enver Hoxha instructed that, "...we should utilize all the forces that we consider unsuitable--first and foremost from our soil, and, at the same time, we should exploit our machinery and our industry to the maximum, something we must do without fail."

We have reserves everywhere for increasing production and for improving of effectiveness of the economy: in the structure of production, in the utilization of production capacities, in advanced experience, and in highly conscientious work to apply the techniques and technology of production and to perfect them. But their utilization requires a sound revolutionary understanding of what has been achieved or planned in the economy and not always considering them as for the best. In one of the materials in the volume, Comrade Enver emphasizes that without limiting the amount of land used to grow various types of bread grain and continually increasing their production as a major task, agriculture must be guided by the requirement to concentrate on those types of crops for which we have a greater need. These instructions, which the 9th plenum of the Central Committee party made even more thorough,

are reflected in the 1985 plan not only to improve the structure of agriculture, but also that of various branches of industry, transport, etc. These improvements will bring better fulfillment of the needs of the economy and the people, as well as a higher degree of effectiveness for increasing financial and foreign currency sources for purposes of extended reproduction in ever greater dimensions. The task assigned involves taking measures to put into practice the improvements that are made and, on the part of the ministries and executive committees of the district people's councils, making more thorough studies in this area in order to utilize better the possibilities that our economy has for growth of effectiveness by means of structural changes in the social product and in particular branches of physical production.

The achievements of the 3 past years and of this year show that by utilizing the internal reserves and by means of more scientific organization and direction of production, broad possibilities exist for further improving the tasks of the plan in agricultural enterprises and cooperatives in districts and in various branches and sectors of the economy. An investigation that was made regarding the production of wheat reveals that despite the difficult weather conditions, over one and a third of the country's agricultural operations obtained higher yields per hectare than in 1983. Good achievements were also realized by many agricultural enterprises and cooperatives in other areas. At the Shkoder Zootechnical Station, 140 quintals of fodder units per hectare were obtained from a total land area of 465 hectares, at a time when the yields of forage crops are at a low level in most units. In the Lezhe agricultural enterprise, 12 quintals of meat were obtained from one sow, while 11 quintals were obtained in the Gose agricultural enterprise. From these achievements there truly springs a task for the other enterprises and agricultural units, and even for the Ministry of Agriculture and the districts. Comrade Enver has assigned the task in this way: "...In order for this real, factual result that we have before our eyes to be achieved by not only one brigade, but by all the brigades of the same cooperative, and not by one cooperative, but by all our cooperatives, an all-around struggle must be conducted."

We must extend the struggle to break those concepts which consider that everything that is done is for the best, not only in agriculture, but everywhere--in industry, in construction, in transport and in the social and cultural sectors, because this will open wide paths to revolutionary thought and to the application of concrete measures for the increase of production and the growth of its effectiveness. It is well known that every planned enterprise has a specific number of chief and assistant workers. But when, in execution of tasks assigned by the 9th plenum of the Central Committee party, the proportion between chief and assistant workers was reviewed again by the party organization and the directorate of the "Enver Hoxha" tractor combine, apart from what was planned, it was found possible that about 70 assistant workers could pass as chief workers. Such reserves exist in all enterprises, but it is necessary to undertake concrete action and struggle against bureaucratic, technocratic and liberal manifestations which act as restraints on the revolutionizing of production. We say this because even from the review that was made in the light industry and food enterprises, cases of excess

raw materials and various other materials were discovered. With the measures that are being taken by the Ministry of Light Industry and the Food Industry, these excesses will diminish the needs for foreign currency funds that were provided for in the draft plan.

A problem that is closely connected with the discovery and utilization of all internal reserves, wherever they are, is the need to consume as much as we produce. With regard to this question, Comrade Enver, in one of the materials in Volume 42, forcefully points out that "No one must try to use anything if he himself does not produce and does not accomplish what he has to produce in time, in quantity and in quality. The party's first task is to see to it that people who 'have their heads in the clouds' should walk with a brain in their heads and with their feet on the ground." This is a concretization of the principle of self-reliance as a general policy for the building of socialism in our country. Proceeding in this way ensures that in extended socialist reproduction, correct material and financial relations will always be maintained on the basis of possibilities created by the dynamic development of the economy.

Now, when our economy is being developed only on the basis of internal material and financial sources, some anachronistic tendencies are observed which would increase productive and non-productive consumption without "worrying" much about their sources and how they will be covered. The basic party organizations must not permit and must curb the practices of some administrative apparatuses in various enterprises and cooperatives, as well as in some executive committees and ministries, which begin with an unhealthy spirit. While they do little for the growth of production and export, for the increase of financial sources, etc., they request more raw materials, electrical energy and fuels; they request imports, investments and expenditures in the non-productive sphere, etc., which exceed the possibilities of the economy. This practice must be fought even more during fulfillment of the plan, because it is often observed that while some ministries, districts and labor collectives in industry, agriculture, etc., do not fulfill the production and contract tasks, in the area of consumption, they continue to follow the plan and in many cases they even exceed the norms of utilization of raw materials, etc., without investigating where the state will obtain the material, financial and foreign currency funds that are not realized by them.

The formulation of scientific plans and their realization require that greater work be done by the basic party organizations and their levers to apply the line of the masses and to mobilize the masses still more in the problems of the planned organization and direction of the economy. In one of the materials in this volume, Comrade Enver writes: "When we say that an enterprise or an agricultural cooperative should discuss a problem, it means that the working class or a considerable number of cooperativists should discuss it, and not only the directorate of an enterprise or the chairmanship of a cooperative. If the discussion of the plan is organized in this way, the sound logic of the masses, their knowledge and experience, will be set into motion.... Experience shows us that when we have acted in this way, the results have been great. It is a fact that the revolutionary vigor of the party and of the masses is brilliant."

CZECHOSLOVAKIA

ADAM SMITH IN SOCIALIST CONTEXT SUMMARIZED

Prague POLITICKA EKONOMIE in English No 11, 1984 pp 1134-1136

[Text] In his study the author deals with the relationship between education and socio-economic development, a topic therefore which has been attracting an increasing attention of economic science for almost a quarter of a century; at the same time, he strives to incorporate it into a broader setting of the role played by the human factor in economic dynamics.

A point of departure for the author have been deliberations on the contribution education can make to the implementation of intensive development which the socialist economy is entering now. He also tried to analyze the dialectical relationship between education and the performance of national economies, as it can be demonstrated by concrete historical examples and as it is also reflected in the evolution of economic thought.

The apparent failure of the theory of the so-called investment-in-man, sometimes also called the theory of human capital which represented a modern culmination of the interest in the relationship of education and economy has been finally used by the author as an impulse for a critical assessment of this theory. For further study of the contribution education can make to economic dynamics he submitted a proposition based on a disaggregation of total educational effects and an identification of those of them which can be claimed to be economically relevant in respect to the specific historical, socio-economic as well as technological conditions.

If the investment-in-man theory, by the way formulated at a time which has been pushing to the forefront of worldwide interest an acceleration of economic growth, was attempting to harness education to the speeding-up of the growth momentum, then it is interesting to note that of recent an opposite idea has been receiving a certain support, too, namely to subordinate education rather to a deceleration of economic growth. Apprehensions that the human environment may become destabilized if the economic growth continues to follow its wrong path and the resources of nature which are finite are exploited in an irrational way have given an incentive to the idea that the deterioration of ecological balance could be halted through a persuasion of the subjective factor to adopt eventually a low or even a zero growth rate. Of course neither an education-stimulated maximization of growth nor its minimization are conceivable as viable alternatives in the contemporary world which needs education rather designed in a way which would help to overcome obstacles standing in the way of world-wide development and enable popular masses to make full use of the fruits of scientific and technological progress.

There prevails a tendency at present to view the investment-in-man theory as too simplifying, a bit opportunistic and as a result of that rather empty of theoretical content. In contrast to scientific goals which it claimed to strive for, namely to explain a considerable part of modern economic growth through inputs of skills into the labour force, or to express it in another way: through the allocation of finance to the sector of formal education, there are many who are of the opinion now that the unprecedented expansion of education in post-war years was rather a consequence than the cause of economic growth, or economic miracles, and that education in respect to the economy continues to be more a consumer of resources than their producer.

It could be inspiring under such circumstances to devote due attention also to the original sources from which contemporary theories on the relationship between education and economy emerged, namely to the ideas of the classics of political economy. They have conceived the role of educational effects in economic dynamics in a more fundamental manner as well as in a broader context — not just as an alleged causal nexus which was said to exist between financial allocations into formal education and a subsequent growth of national income, as the problem was narrowed down by the protagonists of the investment-in-man theory.

A sort of surprise has been expressed sometimes why the classics of political economy, starting from Adam Smith's magnum opus Wealth of Nations, have abstained from devoting more attention and space to delibe-

rations on the economic effects of education if the basic categories of their own discipline, starting from the notions of labour, wage, productivity, are virtually unseparable from educational attributes.

While it is true that in Smith's concept the school production of skills is not central, it is demonstrable that the author of the *Wealth of Nations* tried to identify, as being of crucial importance for the functioning of the economy, specific qualities of those engaged in economic activities which are becoming parts of their personalities as a result of a more broadly understood social learning which does not exclusively depend on the educational message passed on in the classroom but results from the educative influences which stem from the family, the marketplace as well as many institutions of the economy and the society.

In Smith's view it is therefore not just the sector of formal education in which the necessary „skills, dexterity nad judgment“ of the human factor of development are formed, together with other indispensable qualities which condition the functioning of the economic system. The institutions engaged in educational messages could not serve the purposes of development only through the supply of the cognitive, skills-forming component of education. Being in a certain way richer by the experience that the skills-biased investment-in-man theory has remained a long distance from its former objectives, are we able now to appreciate Smith's down-to-the-earth approach in which the *economic impact of specific personality traits of the labour* has been stressed so much and where education is seen as a factor capable of moulding the cultural environment and the way of life of the whole society, which form the broader framework for the economic life.

While appreciating on the one hand the overview from which Smith evaluated the effects of education on the society and the economy we should admit on the other hand that with his interpretation of qualification — as if the expenditure incurred on it were comparable to the capital embodied in the worker — he had also set the track for those who recently chose to draft the fashionable theory of the *human capital*. Even if there exists of course a relationship between the volume of financial resources spent on education and the possibility to implement educational programmes, the experience has repeatedly shown that the essence of economic effects of education will not be found so much in answers to questions „how much“ or „how many“ — be it the amount of money spent on education or the number of diploma holders „produced“ — but rather to „what“ has been attained through the cumulative educative influences *in social consciousness* and which positive *changes favourable to development*, in values, attitudes, actions, have been induced.

Those who in recent years have elaborated on the theory of human capital have mostly approached it from that too narrow viewpoint which tried to equate investment in physical capital with investment in men. Equally simplified however were their methods through which they attempted to prove the alleged causal relationship between educational investment and the growth of national income. Along with correlations intended to demonstrate that economic growth derives substantially from previous educational investment, little convincing proofs were devised to show the linkages between individual costs spent on education and the subsequent wage levels of skilled people obtained in the so-called free labour market. They were said to confirm the view that education must be macroeconomically effective if it also „pays off“ to the individual.

Such „individualization“ of the effectiveness of education is of course highly problematic; the productive effect of education in the modern economy does not result so much from isolated performances of individuals, as from teamwork, collective cooperation and complementarity of specialized skills. Ultimately of course, recent experience has denied the claim which was implicitly contained in the human capital theory that the more skills will be accumulated in the labour the quicker will be the growth of the economy: what has been sometimes called „skills escalation“ has proved not to be able *per se* to revive economic growth in industrial capitalism and the ranks of the unemployed and unemployables have been filled with many diploma holders.

Nevertheless a confrontation of the theory of human capital with the reality may provide us with an optimistic conclusion, namely that the failure of a theory trying to explain the economic effectiveness of education was essentially only a *failure of assumptions concerning a growth-generating effect of specialized skills* — reduced mechanistically to purely quantitative and quantifiable effects and adopting approaches and yardsticks which are acceptable in physical investment only — and that the lesson drawn from this experience should consist in trying to evaluate the impact of education on the economy *from a more comprehensive viewpoint*, namely of the skills, of the personality-forming and the social effects of education. In contrast to earlier attempts preferred by economists to look only for quantitative changes in education as a clue to their subsequent economic impact, a method which brought only meagre and unconvincing results, it seems to be advisable now — and it is also more in line with the approach adhered to by economic classics — to concentrate the attention rather on the *content of education and its impact on the labour and population* in respect to the shifting priorities of the economy, society, technology.

Taking this as a point of departure it would be possible to formulate an explanatory proposition that the way to a deeper understanding of the role of education in the economy may lead through a *desaggregation of the educational „product“* to its basic *informative and formative component parts* and through a dialectical under-

standing of the relative contributions these components of education may have under given conditions on economic dynamics.

While the *informative* aspect of education makes its positive economic contribution above all during periods of *quantitative changes* in the economy when it is imperative to match the skills with the technical change in the physical means of production — and such apparently was the situation a quarter of a century ago when the theory on investment-in-man was formulated with its strong bias for specialized skills — the periods characterized by *qualitative changes*, such as the first industrial revolution and now the coming higher stage of the scientific and technological revolution, require more stress on the *formation of personality qualities* that would positively influence development processes.

It is perhaps this which may explain why Adam Smith's views formulated at the onset of the first industrial revolution, emphasized personality qualities of participants in the division of labour.

A parallel to that may be drawn precisely at the present time when the requirements of intensive development and the scientific and technical revolution obviously single out from the complex of educational influences for example the capability to cope in an innovative way with novel problems or the creative inventiveness coupled with the ability to apply progressive know-how to practical production uses and to introduce it into the life of the society at large.

In the light of these assumptions it seems to be advisable to *reformulate the criteria and indicators for the evaluation of the economic effectiveness of education* as well as their range and to remove from them the load of sterile quantifications and misleading analogies with physical investments.

Some auxiliary quantitative indicators will of course always be useful, for instance when analyzing, or comparing internationally, the intensity of „educational effort“ on the basis of the share of outlays allocated to the sector of formal education from the national income or the state budget, or when assessing the output of qualifications created. Apart from these statistics-related indicators, a synthetic indicator of „educational accumulation“ could be useful which would assess the relative contribution of different inputs into the national stock of skills, based on time spent on different types of schooling and taking into account also the specific „obsoleteness“ of education which is a function of time and of physical and moral causes.

A really deeper insight into the impact of education on the economy should be provided however by a disaggregation of the content of the educational „product“ at least into two of its basic component parts: one supplying professional skills and the other forming personality traits, value preferences, life and work attitudes, motivations, aspirations.

At the same time however it should be stressed that the suggested breakdown of the economically relevant effects of education into their informative and formative components — or to put it in another way, into *cognitive and non-cognitive effects* — together with an assessment of their development-generating potential under changing conditions and needs of given economies, societies and technological systems may probably not be more than the *first approximation* towards a new and more realistic appreciation of the role of education in the economy.

CSO: 2020/49

GERMAN DEMOCRATIC REPUBLIC

TRANSPORT MINISTER ARNDT ANSWERS QUESTIONS

DW151223 [Editorial Report]. East Berlin Domestic Service in German at 1600 GMT on 11 January carries a 45-minute recorded "Listeners Forum" program in which Transport Minister Otto Arndt answers listeners' questions about his ministry's activities. He begins by talking about the present difficulties in transportation as a result of extremely cold weather conditions and says that due to the help of railroad workers and many other volunteers, it has been possible to keep transportation in the GDR "fully functioning" nonetheless, he admits, there are problems, particularly in the north. In future, one should take into account that not only main roads but also by-roads are of importance. Special attention is currently being given to the support of the hard-working coal miners to make sure that consumers are quickly supplied with this important heating material. In addition, his ministry concentrates on improving commuter and passenger traffic which has been partly affected by delays. Meanwhile, the situation has largely stabilized.

Answering several listeners' questions about the further reduction of transportation costs, Arndt stresses that this task has not become easier and requires large efforts. The transportation volume will be increased further, however, not to the same extent as goods production.

Regarding the electrification of railroad lines, a subject that many listeners are interested in, the minister states that this year another 300 km will be electrified. This means that by the end of the year about 37 percent of the railroads will be electrified. In the Berlin area, 70 km will be electrified with the aim of "connecting important switchyards like Rummelsburg and the Pankow and Koepenick freight yards to the electrified system." In the north, the Rostock main station and, by the end of the year, Warnemuende will be connected. Other electrification projects are "the Stendal-Geestgottberg section on the Magdeburg-Wittenberge line and the Rosslau-Wittenber section. These are the most important projects which we want to implement this year," Arndt says.

Another future project is the electrification of the Berlin-Warsaw-Moscow line. There are considerations about how this project will be continued in the 1986-1990 5-year plan. During that plan period, the Berlin-Frankfurt/Oder line will also be electrified in coordination with the People's Republic of Poland and the USSR. The advantages of electrification are obvious, Arndt notes, because the GDR produces power from domestic brown coal. It also has resulted in "a reduction of operational costs in the amount of millions of

marks, and not lastly electrified railroads naturally are also environment-considerate." In local traffic, too, electrically operated means of transportation are utilized, in other words, street cars and buses. On the basis of studies, a bus network will be set up in a number of cities, for instance in Suhl, Wismar, and Stralsund. Details in this respect will be laid down in the next 5-year plan.

Several listeners express cautious criticism of the motor vehicle repair and maintenance service. In this connection, Arndt states that based on a resolution by the Council of Ministers, solutions are worked on "about how the people's demands can be better satisfied." The 1985 plan envisages a further significant improvement of these service performances. A work group under this chairmanship deals with the improvement of replacement part production and maintenance. The opening hours of service stations will be adjusted to requirements. Trade, production cooperatives, and private enterprises are called on to "substantially" improve the service.

Asked about the modernization of the Berlin stations, Minister Arndt says that "of the 51 S-bahn stations, we set up 8 new stations by the end of last year in connection with the extension of the S-bahn. This year, we have begun reconstruction of 14 stations, and 13 will be completed this year. Of the 22 underground stations that must be modernized, we began in 1984 with the stations Friedrichstrasse, Kosterstrasse, Stadt-mitte, and so forth which are being completed. The remaining 18 stations will be reconstructed and modernized this year." There are considerations to expand the underground system in Berlin, which are, however, not yet ripe for decision. The Berlin Ost-Bahnhof is being reconstructed to become Berlin's main station.

Answering a question about the development of inland navigation which due to the weather conditions is currently suspended except for a shipping lane in Berlin, Arndt notes it will be intensified because of the low costs. In accordance with the 1985 plan, the technical fleet will be modernized. In his view cooperation between ships and railways is unsatisfactory. Shortcomings in this respect must be resolved and eliminated by the local authorities. Examples of good cooperation are Magdeburg, Eisenhuettenstadt, and Brandenburg. The mercantile fleet will increase its importance and will be further expanded. "At present, we have more than 150 ships and roughly 2 million tons of load capacity, and one-fourth of all foreign trade transports are handled by this fleet," Minister Arndt says.

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HUNGARY

FATE OF DEPOSED DIRECTORS EXPLAINED

Budapest MAGYAR HIRLAP in Hungarian 30 Nov 84 p 7

[Interview with Dr Gyorgy Lorincz, deputy director of a department in the Ministry of Justice: "What Will Happen to the Directors?"]

[Text] The Council of Ministers modified one of its previous regulations concerning the legal status of company directors. This was necessary because the position of directors of enterprises which are under the general direction of the company council or the workers' general assembly (assembly of delegates) will change by 31 January. We asked Gyorgy Lorincz, departmental deputy director in the Ministry of Justice, for the details.

[Question] For how long can the directors be elected and can they be dismissed?

[Answer] The company council or the workers' general assembly (assembly of delegates) elects the director for a specified period of time--usually for 5 years. The prior approval of the founding organization is also necessary. If the director is not fit for the performance of his job or did not fulfill the requirements defined at the time of the election, he can be dismissed even before the expiration of the specified period of time. Directors released without disciplinary sanction should be helped--according to the regulation--to find employment elsewhere or in a different area of activity.

[Question] By whom?

[Answer] It is hard to answer in generalities. It depends on the concrete circumstances where, in what sphere of activity the former director will work. In any case his decision whether or not he wants to stay in the company in a lower-level position should be taken into consideration.

[Question] Who in the new management situation is entitled to exercise the employers' rights over the director?

[Answer] The company council transfers the exercise of some rights, primarily those not concerning the director's employment, to the council chairman. For example, one could imagine that determining vacations for the director would be in the area of transferred rights. The assembly of

workers (assembly of delegates) chooses the director, asks him to render account of his work and dismisses him; the other employer rights are exercised by the company management.

[Question] Why was the regulation issued that the directors should turn directly to the labor tribunal with labor conflicts?

[Answer] Even at present these conflicts are not judged by labor arbitration committees because most of the time directors have to turn to the official superior. But in the future the companies generally governed by the company council or assembly of workers (assembly of delegates) will be the legal supervising authority and it will not be possible to settle labor problems of concerned directors within this framework.

[Question] What will happen with the "traditional" directors?

[Answer] The labor conflicts of employees holding higher managerial posts in companies which stay under the supervision of the state administration will still be evaluated under the present system.

12647
CSO: 2500/131

HUNGARY

FORUM FOR ENTERPRISE DIRECTORS

Budapest NEPSZABADSAG in Hungarian 14 Dec 84 p 6

[Text] Thursday in the headquarters of the Patriotic People's Front State Council a company managers' forum was set up. Imre Pozsgay, the secretary general of the Patriotic People's Front (HNF), sketched the importance of the forum which was developed by the HNF's working committee on economic policy and under the auspices of the Hungarian Chamber of Commerce. He pointed out that the People's Front and enterprises would like to step beyond current formal relations. Using the specific methods of the People's Front movement they would like to help and strengthen the inner democracy of economic units.

Further on, the general secretary said: The directors of the HNF's State Council and the Hungarian Chamber of Commerce have agreed that it is necessary to reliably inform public opinion about the activity of enterprises and about the work of economic leaders. It is important that economic decisions made by enterprises be met with the proper public reception. The Patriotic People's Front will provide help in translating social-consumer opinions. The HNF needs the opinions and advice of practicing economic managers and professionals in order to form opinions and make proposals. It is believed to be appropriate that the HNF and the Chamber of Commerce present a consolidated viewpoint on important economic decisions in the future. The forum now brought to life is destined to contribute to this cooperation.

12647
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HUNGARY

BROADER ROLE FOR NATIONAL DEVELOPMENT BANK OUTLINED

Budapest MAGYAR HIRLAP in Hungarian 16 Dec 84 p 1

[Text] : The financial institution supporting state development policies, the State Development Bank (AFB), has been enriching its activity with more and more elements. The general director of the State Development Bank, Peter Havas, informs Ference Pichler, our coworker in the Hungarian News Agency, about the changes, about the development work of the bank and its experiences with the new initiatives.

Next year the internal organization of the AFB will be modified in connection with the development of the bank's activities--he said--we will separate the organizational units which deal with infrastructure development from units which finance manufacturing firms, because in the last area we would like to increasingly apply commercial methods. The organization created for this purpose will also take care of state support through business-type credits for preferential development decided by the enterprises. In this section we will increase pure commercially oriented financial activities so that we may later create a subsidiary bank from this organization. Aside from this we will also generally develop the operation of our bank network. Our goal is to serve our clients to a greater extent. We will expand our rural bank branches and the sphere of responsibility of their management and this way speed up the processing of business contracts. From now on they will have to turn to the Budapest center only in important cases and as their independence grows, they may more successfully cooperate with their clients.

The new pursuits of the bank (the organization of contracts, establishing mixed enterprises, forming new financial institutions, issuing bonds) are tightly linked to our traditional activities, so we can support the realization of the main goals of economic policy with banking instruments. We will support the faster development of the economy through expanding the dimensions of our activities and through the organization of commercial endeavors.

Among our endeavors the so-called "investments" have won an important role. Contract deposit associations, MEDINVEST, KULTURINVEST, TRANSINVEST, FARMINVEST, which undertake the construction of turnkey health care establishments, cultural, education investments, railroads, bridges, airports

and complete agricultural units, have been formed with our participation. We participate in these investments with our own capital, taking the risk. So far the branches have operated with varying success. The most successful is KULTURINVEST, which aside from arranging contracts, has established its own construction unit. Although the goal of contracting is profitability, these branches are simultaneously workshops for the acquisition of entrepreneurial practice.

The Small Business Innovation Office and the Creative Youth Association were established with the cooperation of the Central Committee of the Hungarian Communist Youth League and KIOSZ (the National Association of Independent Retailers) for the promotion of innovative activity. We also established four innovative financial institutions with the joint capital of the National Technical Development Bank, the Ministry of Construction and Urban Development, the Ministry of Agriculture and the Food Industry, the National Federation of Cooperatives, the National Council of Producer Cooperatives, the National Federation of Artisan Cooperatives and the State Development Bank. The small banks finance the whole innovation process. Besides the realization of technical development they also give credits for investments necessary for entering the market.

In the past 2 years the State Development Bank has taken part in the issuing of a great number of bonds and we also buy and sell them in secondary markets.

12647
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POLAND

FOREIGN TRADE IN AGRICULTURAL, FOOD ITEMS DISCUSSED

Warsaw HANDEL ZAGRANICZNY in Polish No 9, 1984 pp 18-20

[Article by Nika Bochniarz: "Agri-food Items in Poland's Foreign Trade-- Tendencies and Prospects"]

[Text] Turnovers of agri-food items have been and continue to be important in Poland's foreign trade. This applies to export as well as to import. Foreign trade of agricultural items with capitalist countries (see Table 1) plays a particularly important role.

During 1971-1975 exports of agricultural items to capitalist countries made up almost one-fourth of Poland's foreign-exchange income from export. In the years that followed this share shrank considerably due to the much higher rate of export of raw materials and industrial goods than of agri-food items. At the same time, the share of agri-food imports in Poland's total imports from capitalist countries rose sharply. Thus, despite the steady growth of amounts of agricultural exports, the simultaneous increase in imports of agri-food items was responsible for the growing unfavorable balance of trade, especially in turnovers with capitalist countries. The situation became particularly disturbing in 1981, when, as compared with 1980, the value of farm exports dropped 33 percent, including a drop of 31 percent to capitalist countries, while imports rose 12 percent. As a result, the value of agricultural imports was almost three times that of exports. During 1982-1983, due to the drastic reduction in imports and the growth of exports, the unfavorable balance of foreign turnovers in agri-food commodities shrank considerably.

The Commodity and Geographic Structure of Export

The share of animal and plant products in the commodity structure of Poland's agricultural export was about the same, that is, about 50 percent each. In the assortment structure of the animal-derived export items, the highest share, according to value, was in canned hams and pork shoulders, young cattle and beef, poultry (waterfowl), horses and horse meat, fish and fish products, canned and cured meats (altogether over 80 percent of export of animal-derived items). There was a much larger diversity in exports of plant products than of animal products, still several items were very significant in establishing the value of this export. They included: sugar, potatoes, rape(seed) oil, seeds, vegetables, and fruits and fruit products.

Table 1. Share of Agri-Food Items in Poland's Total Trade Turnovers During 1971-1982 (in percent of percent, total export and import = 100)

(1) Wyszczególnienie	1971-1975 ¹⁾	1976-1980 ¹⁾	1981	1982
Udział eksportu (2) rolno-spożywczego w eksportie globalnym w tym kraje:				
socjalistyczne: (3)	12,6	8,9	6,0	6,1
kapitalistyczne (4)	5,4	3,7	2,0	2,8
z tego:				
EWG (5)	23,4	16,6	11,8	12,0
rozwijające się (6)	27,9	17,7	14,5	14,4
8,7		9,2	2,8	3,0
Udział importu (7) rolno-spożywczego w importie globalnym w tym kraje:				
socjalistyczne: (3)	12,4	13,4	18,9	15,1
kapitalistyczne (4)	7,2	4,3	4,6	7,3
z tego:				
EWG (5)	17,9	23,6	45,3	34,7
rozwijające się (6)	9,4	11,1	35,2	22,4
61,1		39,9	55,0	44,5

¹⁾This comparison applies to annual averages during the 1971-1975 and 1976-1980 five-year plans.

Source: Main Statistical Office reports, various yearbooks, and the author's own calculations.

Key:

- | | |
|---|---|
| 1. Item | 5. EEC countries |
| 2. Share of agri-food export in
total export | 6. Developing countries |
| 3. Socialist countries | 7. Share of agri-food import in
total import |
| 4. Capitalist countries | |

Large fluctuations in quantities of commodities allocated for sales abroad were typical for agri-food exports as a whole. The share of particular assortments frequently changed, which was due primarily to changes in the size of domestic production. This caused disruptions in trade and often had an unfavorable impact on export prices.

Buyers from West European countries and the United States played an important part in the geographic structure of Poland's export of agri-food items. On the other hand, large differences appeared in the commodity structure of exports to particular countries. But in general it may be said that over 95 percent of the animal products and about two-thirds of the plant products were exported to countries in the second payments area [capitalist countries] and especially to Great Britain, Italy, the FRG, France, and the United States. Although the share of agri-food items in Poland's total exports to this group of countries showed a declining tendency, still deliveries to the above-listed countries made up one-fifth of Poland's total exports to the second payments area and approximately 65 percent of the entire export of agri-food items to the capitalist countries (see Table 2).

Table 2. Share of Agri-Food Items in Poland's Export to Selected Capitalist Countries (in percent of percent)

(1) Kraje Lata (2)	(3) Całkowity eksport Polski do wymienionych krajów = 100				
	W. Bry- tania (4)	Wlo- chy (5)	RFN (6)	Franc- ja (7)	USA (8)
1971—1975 ¹⁾	34,3	39,3	29,3	27,5	46,3
1976—1980 ¹⁾	14,6	30,5	16,3	15,9	39,4
1980	17,0	31,6	13,2	18,8	39,3
1981	14,1	24,9	12,4	19,2	32,3
1982	11,8	28,9	13,6	14,4	41,6

¹⁾This comparison applies to annual averages during the 1971-1975 and 1976-1980 five-year plans.

Source: Main Statistical Office reports, various yearbooks, and the author's own calculations.

Key:

- | | |
|---|------------------|
| 1. Countries | 5. Italy |
| 2. Years | 6. FRG |
| 3. Poland's total export to
listed countries = 100 | 7. France |
| 4. Great Britain | 8. United States |

The socialist countries' share in Poland's agri-food exports was not large. Plant products, particularly potatoes, beer, seeds, fruits and vegetables, were slightly more significant in Poland's exports to the socialist countries.

The Commodity and Geographic Structure of Import

In the commodity structure of import, plant products definitely prevailed, making up from 75 to 90 percent of agricultural import overall in the particular years. The basic items were, and continue to be, grain and high-protein feed, which make up from one-half to approximately two-thirds of total farm imports. Next, from the standpoint of size, were: vegetable fats, stimulants (coffee, tea, cocoa), fruits, citrus, vegetables, fruit and vegetable products, and wines. Tropical fruits, citrus, and coffee, tea and cocoa, were items that were imported in ever-increasing amounts during the 1970's. Although purchases of citrus and stimulants (with the exception of tea) were drastically reduced during 1980-1983 due to lack of money, nevertheless these commodities will again be imported in the future since the amount of their consumption (with the exception of tea) is still very low, especially in comparison with highly developed countries, capitalist as well as, for example, Czechoslovakia or the GDR. The income flexibility of demand for these items is exceptionally high.

The share of animal items in import does not exceed 15 percent of total farm import. The years 1971, 1977 and 1981 were exceptional, when this share grew to approximately 20 percent due to exceptionally high imports of meats and animal fats.

The share of commodities coming from capitalist countries in the import of agri-food items to Poland was much larger than the share obtained in the socialist countries. Important changes in the geographic structure of this import took place in the 1970's due to a large increase in imports of farm products from the capitalist countries. This change was caused mainly by a shift in imports of grain almost exclusively to the capitalist countries. Although in 1971 the share of import of grain and feed in farm imports from capitalist countries was 32.3 percent, in 1980 it more than doubled, going to 70.5 percent. On the other hand, grain imports from socialist countries continually dropped. In 1971 this share in farm imports from socialist countries was 53.8 percent; in 1980, 16.1 percent; and in 1981 it fell to 9.9 percent (in 1982 it rose to 13.9 percent). Purchases of high-protein feed were made only in capitalist countries.

The Prospects of Poland's Foreign Trade in Agricultural Products

The basic factors determining the volume and value of foreign turnovers of agricultural items will be the domestic potential of farm production and the ability to sell and purchase farm products on the foreign markets.

The necessity of paying off the debt and obtaining foreign-exchange funds for indispensable imports means that an increase of exports to countries in the second payments area is particularly important for foreign trade. The long history of farm exports from Poland to the markets of the highly developed capitalist countries, the potentials of domestic agriculture and the food industry, the limited ability to make structural changes in the economy and the slowness of these changes--all these factors indicate that agri-food items are one of the few that can, in the very near future, find a steady sales market in the capitalist countries. The potential of a growth of farm exports from Poland is shown by the fact that even under the present economic difficulties, as well as in 1982 and 1983, these commodities had the highest growth rate (after fuels, energy and metallurgical products) of export to both socialist and capitalist countries. It is also worth mentioning that the highest increase in export volume occurred in the plant-products group (vegetables, fruits, fruit and vegetable products, sugar, alcohol products, rape(seed) oil, and rye. Considering the present tendencies of Polish farm exports and the anticipated sales potential, it may be assumed that in the immediate future certain changes will take place in the commodity and geographic structure of Poland's agricultural export. These changes will be based mainly on a growth of share of plant products in total farm export, and also on an increase in the share of farm items in exports to socialist countries.

Among the plant products, fruits and vegetables appear to have the best sales potential in the coming years. The primary product in this subbranch in exports to capitalist countries will be frozen fruits and vegetables. However, it will be more difficult to export processed fruits and vegetables to capitalist countries because, on the one hand, consumption of these products has dropped in the West, and on the other hand, due to the generally unsatisfactory quality of our packaging. Fresh fruits and vegetables will remain the main commodities of export to socialist countries.

The amount of sugar exported (sugar historically has been one of the most important items in Poland's farm exports) will be limited by the size of domestic demand as well as by the limited potential of sales on foreign markets. The very low sales potential of potatoes on markets of the socialist countries will also limit their export; however, the low quality of the potatoes offered has also limited their export. Also, the export of rape(seed) oil which contained a higher acid content than allowed by international standards, has met with selling difficulties. Unless changes are made in domestic production it will be hard to increase exports of this product. Of the remaining plant products those of greater importance in export will include seeds, tobacco, malted barley, alcohol products, and forest-undergrowth soil.

No large changes should be anticipated in the geographic and assortment structure of animal-products exports. The capitalist countries, principally those belonging to the EEC and the United States, will be the primary sales markets for exported meat products. Such a system of sales markets stems from specific difficulties arising from the growth of protectionist measures aimed at protecting one's own production, measures applied particularly by EEC countries. However, the stability of Poland's export of canned hams to the United States, or swimming poultry to the FRG, attests to the fact that high-quality products have a good position on the market, even during a period of growing protectionism. Other animal exports which should find a sales potential on foreign markets include geese and ducks, horses and horse-meat, lowland sheep, rabbit meat and venison. It will probably be impossible to increase the export of dairy products due to the growing overproduction in the West European countries.

Aside from increasing exports, an important factor in the reduction of the deficit in agricultural trade is improvement in imports. Just as in export, improvement will be determined primarily by a rapid expansion of farm production in Poland and the adaptation of its structure to domestic needs. Grain and feed will constitute the main items in our farm imports. Despite the growth of grain production in our country, it will still be necessary to import certain varieties, and primarily grinding-grain and oil(seed) cake, and high-protein concentrates. Without this import it will not be possible to increase animal production. The reduction of high-protein feed in 1982 and 1983 had a large impact on the size of domestic animal-production (especially hogs and poultry) and made it necessary to import meat. In addition to indispensable imports of grain and feed, other important items in Poland's farm imports will continue to be vegetable fats, fruits and vegetables, fruit and vegetable products, and coffee, tea and cocoa. How much is imported will depend on the ability to pay, and thus, on the size of export.

The attainment of net food self-sufficiency by the end of the 1980's is a very difficult task, for the food complex as well as for foreign trade. If this strategic economic goal is to be achieved, all those involved must cooperate, and above all, the assumptions of agricultural policy contained in the "Program for the Development of Agriculture and the Food Economy," must be consistently applied.

The attainment of net food self-sufficiency must be a long term process which is correlated with the expansion of domestic agricultural production. If we were to attain this self-sufficiency through a drastic reduction in agricultural imports, particularly of grain and high-protein feeds, we would be taking the risk that agricultural production would stagnate, especially animal production; that agriculture resources would not be efficiency utilized; and that restoration of balance on the food market would be halted.

9295
CSO: 2600/419

YUGOSLAVIA

PLANNED PRODUCTION IN KOSOVO, 1984, 1985

Pristina DELEGATSKE NOVINE (supplement to JEDINSTVO) in Serbo-Croatian
7 Nov 84 pp 1, 11, 12

[Article: "Excerpt From the Draft Resolution on the Cosioeconomic Development and Economic Policy of the Kosovo Socialist Autonomous Province in 1985"]

[Text] Social Product

-- 1983 prices;

-- growth rates.

	<u>Assessment for 1984</u>	<u>Planned for 1985</u>
Overall economy	2.5	6.0
-- social sector	2.8	6.4
-- private sector	1.2	4.0
Industry	3.0	8.0
Agriculture	1.4	4.0
Forestry	1.5	1.1
Waterpower engineering	3.5	4.2
Construction	-0.5	3.0
Transportation	5.4	5.3
Trade	2.1	5.0
Tourism	4.0	5.0
Handicrafts	4.6	6.0
Communal activities	4.5	6.8
Other activities	5.5	7.4

Physical volume of agricultural production;

-- growth rates.

	<u>Assessment for 1984</u>	<u>Planned for 1985</u>
Overall agriculture	1.4	4.0
Farming	-8.3	6.3
Fruit growing	9.3	3.4
Wine production	45.6	2.7
Livestock raising	0.7	1.0

Social sector	4.2	4.5
Farming	-13.0	5.3
Fruit growing	3.2	3.7
Wine production	57.7	3.0
Livestock raising	1.5	5.1
Private sector	0.9	3.9
Farming	-7.8	6.4
Fruit growing	13.1	3.2
Wine production	3.6	2.0
Livestock raising	0.6	0.8

Some Basic Indicators for Development: growth rates.

	<u>Assessment for 1984</u>	<u>Planned for 1985</u>
Social product -- total	2.5	6.0
-- social sector	2.8	6.4
-- private sector	1.2	4.0
Industry	3.0	8.0
Agriculture	1.4	4.0
Number employed in social sector		
-- total	203,126	213,282
-- economy	151,020	159,092
-- noneconomy	51,106	54,190
Growth rate -- employment		
-- total	4.7	5.0
-- economy	5.0	5.3
-- noneconomy	3.9	4.0
Productivity of labor	-2.0	1.0
Exports of goods and services		
-- total	8.4	16.0
-- convertible area	35.4	25.0
-- clearing area	9.1	7.0
Imports of goods and services		
--total	4.1	9.0
--convertible area	4.1	8.0
--clearing area	23.9	11.0
Coverage of imports by exports		
-- total	86.1	91.3
-- convertible area	64.8	74.8
Investments in basic capital (social sector)		
-- total	-6.9	13.4
-- economy	-6.5	14.8
-- noneconomy	-9.5	3.5

Total receipts (nominal growth)	53.5	55.0
Funds spent	52.0	54.0
Income earned	54.0	56.0
Part of income for joint consumption	39.1	45.0
Part of income for general social needs	24.7	33.3
Part of income for OURs	43.0	47.1
Net income	32.8	42.0
Part of net income for personal incomes	32.5	38.9
Part of net income for increasing the material base for labor	49.0	63.8

Physical Volume of Industrial Production: growth rates.

	<u>Assessment for 1984</u>	<u>Planned for 1985</u>
Industry -- total	3.0	8.0
Electrical industry	5.1	24.2
Coal production	3.4	20.5
Ferrous metallurgy	-4.3	2.0
Production of nonferrous metal ores	-0.5	4.0
Production of nonferrous metals	2.0	6.0
Processing of nonferrous metals	0.1	0.8
Production of nonmetallic minerals	0.5	4.7
Processing of nonmetallic minerals	-5.2	5.8
Metal manufacturing industry	14.6	3.0
Machine-building	5.0	3.0
Production of transportation equipment	6.7	3.9
Production of electrical machinery and equipment	3.8	3.0
Production of basic chemical products	-1.0	1.1
Processing of chemical products	5.0	2.0
Production of construction materials	1.5	3.0
Production of final products from wood	-8.0	3.0
Production and processing of paper	-3.1	2.5
Production of textile yarn and cloth	3.3	2.0
Production of finished textile products	10.0	3.1
Production of leather and fur	20.7	3.0

Production of leather		
footwear and goods	6.0	2.2
Processing of rubber	7.6	3.1
Production of food products	3.4	5.0
Production of beverages	0.9	1.7
Production of livestock		
fodder	18.4	39.9
Production and processing		
of tobacco	6.6	8.5
Printing industry	-8.0	1.0

9909

CSO: 2800/125

YUGOSLAVIA

EFFECTS OF INFLATION ON ECONOMIC OPERATION, JANUARY-SEPTEMBER 1984

Belgrade EKONOMSKA POLITIKA in Serbo-Croatian 17 Dec 84 pp 11-12

[Text] The periodic accounting of the economy's financial performance over the period January-September of this year shows the extent to which the present system of calculating gross income and income is unrealistic at a time when inflation is running between 50 and 60 percent. Because of the unrealistically low valuation of fixed capital (for the second successive year) in this period depreciation was only 421 billion dinars, while energy costs, which rose 105 percent, amounted to 495 billion dinars (17.6 percent more than depreciation). For the sake of comparison, in the same period of last year energy costs were 240 billion dinars, and depreciation 305 billion; that is, depreciation was 27.1 percent more than energy consumption. This system of computation, combined with undervaluation of the assets of the economy and large changes in price relations, resulted in unrealistic indication of income and its distribution.

In the January-September period gross income rose 61 percent over the same period of last year. Under the impact of the faster growth of costs, above all energy costs, income realized was up 58 percent; that is, its growth was three index points smaller than the growth of gross income. Total appropriations from income for government, for social services, for interest paid on credit, for insurance premiums, and miscellaneous rose 70 percent, and the net income in nominal terms was up 52 percent over the same period of last year, which, when inflation is taken into account, means a real reduction of net income.

If the financial results achieved are evaluated on the basis of the economy's accumulation and losses, it can be said that they are considerably more favorable than the same period of last year. Appropriations for the business fund amounted to 415 billion dinars, while losses were 110 billion dinars. At the same time, appropriations to the business fund rose 64 percent, which means a real growth, while losses were up 23 percent, which means that in real terms they were smaller than in the same period of last year.

The appropriations to the business fund (accumulation) have a share in the total that corresponds to the amount of depreciation computed at the prescribed minimum rates. If depreciation computed in this way covered simple reproduction, it might be said that the economy's ability to form capital was at a relatively high level. The actual situation is essentially different from

that. Revaluation of fixed capital is not keeping up with inflation, so that simple reproduction is not being covered through depreciation. In the period January-September depreciation rose only 38 percent (both because of revaluation of fixed capital and because of the growth of fixed capital during this year), which means that revaluation did not cover even 50 percent of the inflation.

Share of Income Represented by Interest Paid

<u>Republic or Province</u>	<u>Share</u>	<u>Republic or Province</u>	<u>Share</u>
Yugoslavia	17.2	Slovenia	17.2
Bosnia-Hercegovina	16.6	Serbia proper	16.3
Montenegro	27.4	Kosovo	16.9
Croatia	16.3	Vojvodina	18.3
Macedonia	20.9		

Losses and Appropriations to the Business Fund

<u>Republic or Province</u>	<u>Amount, in millions</u>		<u>Losses Relative to Appropriation to Business Fund, %</u>
	<u>Appropriation To Business Fund</u>	<u>Losses</u>	
Yugoslavia	415,400	110,169	26.5
Bosnia-Hercegovina	41,512	10,696	25.8
Montenegro	3,393	4,897	144.3
Croatia	121,583	41,400	34.1
Macedonia	12,627	8,939	70.8
Slovenia	85,362	14,678	17.2
Serbia proper	107,368	15,167	14.1
Kosovo	4,187	3,366	80.4
Vojvodina	39,368	11,026	28.0

This computation of depreciation had something to do with the fact that income as indicated was larger than it actually was, which made it possible to indicate a relatively larger remainder of income, that is, a larger appropriation for expanded reproduction. Of course, a portion of the income augmented in this way was siphoned over into government and social service expenditure. Income was also augmented unrealistically because the economy's money resources, that is, the portion of the business fund used to cover permanent working capital, are not being revalued. This unrealistically augmented income by about 400 billion dinars, that is, by the amount of appropriations the economy made to the business fund.

Even though allocations to accumulation increased in nominal terms, the economy's share in the income distributed was smaller. Thus this pattern over several years has persisted this year as well. It has to be said that the drop in the economy's share in the distribution of income is not a consequence of larger appropriations for government and social services. Income taxes and contributions on income for self-managing communities of interest in the social services (with the exception of deductions for disability and old-age

insurance) increased more slowly than income itself. So the increased appropriations from income resulted almost exclusively from the larger interest, which amounted to 516 billion dinars (a growth of 107 percent).

The Burden of Inflationary Rates of Interest

The share of interest in the economy's realized income (including appropriations from income for work communities within OUR's [organization of associated labor]) amounts to 17.2 percent. The situation is the most difficult in the economy of Montenegro, where the share of interest in income is 27.4 percent, and then in the economy of Macedonia, where this share is 20.9 percent.

On the whole the interest paid in this period was not large in light of the amount of the economy's outstanding credit. Total credits being used by the economy as of 30 September of this year amounted to 4,075 billion dinars, which means that the average rate of interest (per annum) on all credits was less than 15 percent. In this period the economy also realized sizable income on the basis of interest collected. It amounted to 185 billion dinars and was up 128 percent over the same period of last year. The largest amount of interest was collected by OUR's in Slovenia (income from interest amounted to 44 billion and interest paid out 92 billion), and that of the Montenegrin economy was lowest (interest collected 2.7 billion and interest paid 15.9 billion).

If interest were paid at the level of the rate of inflation on all credits being used by the economy, interest would have amounted to about 50 percent of the economy's income. This absurdity is a consequence of the situation in which the economy possesses practically no resources of its own to finance current reproduction, but is almost entirely oriented toward using bank credits. Disturbances are also occurring because of large inventories, which as of 30 September of this year amounted to 2,844 billion dinars, which is only 160 billion dinars less than the economy's income indicated for the first three quarters.

7045
CSO: 2800/159

YUGOSLAVIA

ECONOMIST BAJT EXPLAINS BASIC NEED FOR MARKET ECONOMY

Belgrade EKONOMSKA POLITIKA in Serbo-Croatian 24 Dec 84 pp 17-20

[Interview with Dr Aleksander Bajt, professor of economics at Ljubljana University: "There Is No Self-Management Without the Market"; interviewer, date and place not specified]

[Text] Radical changes in the conditions for the conduct of economic activity are indispensable. That is not debatable. However, warns Dr Aleksander Bajt, professor at Ljubljana University, it would be wrong to forget the market in changing one system for another. It would indeed be best to introduce market rules of behavior unhesitatingly, above all those concerned with setting equilibrium prices of the factors of production. This is the essence of the operation of a market, and this should be the point of departure in automatically demonstrating all those institutions in the system which no longer have a basis or do not belong to a self-managed economy at all, Bajt said in a conversation which we have liberally paraphrased.

EKONOMSKA POLITIKA: The current results on economic performance confirm even in practical terms the nonsense of the assertion that the system is good and the only thing that should be changed is the behavior of collectives in the economy. What do you think is the next necessary step toward getting out of the crisis?

Aleksander Bajt: If you ask me how to change the system in order to alter the behavior of economic entities, I will try to give a new answer to an old question, one that has been under scrutiny for years.

According to an assessment which has not been contested, the behavior of our economic entities is not satisfactory. This can be seen from the poor business performance, above all from the low utilization of labor and capital. There are 1 million workers unemployed, and the marginal product of more than 1 million workers who are employed is equal to zero. The social product per unit investment has been growing slightly more than 60 percent of the growth in the comparable capitalist countries, but expenditure only 50 percent of that increase. The employed labor force has monopolized the available capital and used it to take the place of work effort. The capital intensity of production has thereby been exaggerated twofold.

Two opinions, formed predominantly by a priori considerations, come into conflict in the search for the reasons for the low efficiency of economic activity. According to some, the economic system bears the responsibility for the poor economic performance. According to the others, the system is all right, but economic entities are not behaving as foreseen. There are hardly any empirical studies. According to a fairly recent survey (whose results will be published in PRIVREDNI KRETANJE JUGOSLAVIJE [YUGOSLAVIA'S ECONOMIC TRENDS]), over the last three decades production efficiency was significantly higher in the period between 1963/64 and 1971/74, but it was low even then.

While it is mainly the politicians who emphasize the unsatisfactory behavior, most economists blame the economic system for the poor performance. Which is why the latter insist on changing the economic system and, it goes without saying, the resistance on the part of the politicians, who are its creators. According to the opinion which I set forth back when the stabilization commission was at work, the economic system really does need to be changed in many respects. But it would be wrong to suppose that changing the system will essentially alter the behavior of economic entities. For example, introduction of a "minimal rate of accumulation," which is undoubtedly the central institution in the system which economists advocate, when it is thrust upon the existing economic structure, would alter the efficiency of economic activity only to a degree that would not be essential. The causes of the unsatisfactory behavior are what we might call parasytemic.

This is what I mean by that. The system of socialist self-management was conceived as a system in which goods are produced for the market. Even if it had not been conceived in that manner, even if we forget that, economic activity cannot be carried on in the context of self-management without the market. The enterprise's independence presupposes reaction to the signals of the market and the elimination of other nonmarket criteria of economic activity. The signals of the market are prices, but not just any prices, prices set by the government administration and prices degenerated by inflation, and that not so much the prices of products, which we did not forget in the 1965 reform, as the prices of factors, specifically capital, imports (and exports), as well as labor, which we have thought of only now, under pressure from the foreign debt, the immense unemployment, and the accumulated consequences of nonequilibrium prices. So, the elimination of nonmarket criteria for the conduct of economic activity does not signify so much an elimination of substitution of the market with conclusion of self-management accords and social compacts, i.e., the consensus economy, for the simple reason that that kind of substitution has so far occurred only marginally, more in the heads of certain economist-ideologues than in reality, as the elimination of nonequilibrium prices of factors, the negative price of capital, the overvalued dinar, and, in view of the contributions which burden it, and its low productivity, overvalued labor as well.

EKONOMSKA POLITIKA: Yet the turn toward the market is after all a decisive move.

Bajt: Of course, the market is the most essential element of the self-management system, but that has been forgotten. More accurately, it was thought that

the market, as a condition for the conduct of economic activity in the context of self-management, was given by the existence of commodity-money relations, the money exchange of goods, somehow in the sense of "khozraschet" [Russian for "economic accounting"], but not exchange at quite definite equilibrium prices of factors. That is, the essence of the market--equilibrium prices--was omitted from the concept of an economic system based on the market. Actually, although no one denied the inevitability of the market, it was de facto eliminated from the concept of the economic system because administrative action prevented prices from going to equilibrium levels. Institutions embodying the system were created that were supposedly supposed to operate in a market economy, but that kind of economy did not exist at all except in its forms and in the fact of exchange and prices. In such a situation changing the system, unless what we mean by that is transformation of the formal market into a real market, that is, the exchange of goods and factors at equilibrium prices, cannot yield the results expected of it. Alongside nonequilibrium prices of factors, that is, alongside the nonexistence of the essence of the market, any change of the system whatsoever, conceived in the sense of normative superstructure, will leave the economy's behavior more or less as it has been, and performance will still be similar to what it is at present.

Since I am emphasizing the equilibrium nature of the prices of factors as the essence of the market, the market, as the mechanism for establishing equilibrium prices, is not in and of itself essential, at least in the conceptual context. Insofar as one could manage to set equilibrium prices in a nonmarket way, for example, by price authorities, which presupposes that they would be set *ex ante*, that is, in planning, the economy could function quite satisfactorily even without a market. Although producers "conclude contracts" concerning prices, the levels of those prices are objectively given. Unfortunately (actually it is fortunate, since otherwise the economy and society would be Orwellianized), nothing of that kind is possible, and if it were possible, the big fish would transform ... [typesetting gap--translator's note] of the necessary information system would prevent effectuation of nonmarket setting of prices. Nor is it certain that that kind of economy would be a self-managed economy.

Today we possess some results which confirm the decisive importance of equilibrium prices to the behavior of the economy and its performance. Back in 1977 Yugoslavia was spending (converted to domestic prices) instead of prices at the official rate of exchange of the dinar) 26.2 percent more than it was producing. By 1983 that percentage had dropped to 3.9 percent. Although a large portion of equalization of the trade balance has been achieved by the physical rationing of imports, the important impact of the more realistic rate of exchange of the dinar, especially toward augmenting exports, must not be overlooked. This year's 25-percent increase of the inflow of foreign exchange from tourism (including October) is almost entirely the consequence of the more realistic price of the dinar. If in the past we had conducted a policy of real interest rates, capacity utilization would have been higher, and above all unemployment would have been incomparably lower than it is now.

In other words, although many changes are needed in the economic system in the sense of normative superstructure, it is equilibrium prices of factors which

have the absolute advantage, i.e., that portion of the system which in the past we forgot, thereby cutting down the concept of the system to its normative superstructure, by which we mean that the advantage goes to the market, or, as the alternative terminology would have it, to economic laws. What is more, until we manage to base the system of economic activity in the context of self-management on market (economic) laws, any improvement of the "system" is premature, since we simply do not know in what direction the changes are necessary. Probably basing self-management economic activity on the market, on equilibrium prices, will show that many institutions embodying the system are unnecessary, altogether superfluous, that they came into being precisely because the market wasn't functioning, i.e., as a substitute for it. In that part of the economic system (in the sense of normative superstructure) no economic policy activity is required whatsoever. The institutions embodying the system which have been created will die off in and of themselves, and it will be left to economic policy to take note of that. Should it be tardy or fail to do that at all, its oversights will not have any sort of fateful consequences.

The areas for changes of the normative superstructure, as well as the directions of the changes themselves, will become clear only after the system is improved through the establishment of effective markets of the factors of production [original reads "products"], i.e., after the present institutions have died off. If any extensive activity concerning the system were to be developed before the market has been definitively established, new normative institutions could be created in areas in which they are not necessary at all or the wrong institutions could be created in areas in which changes are necessary. Deregulation--but not normative, since we are incapable of that, but actual deregulation--seems at this moment to be the most suitable policy concerning the economic system in the sense of a normative superstructure. We should realize that in spite of the extremely extensive normative institutionalization (in the laws embodying the system) an economic model of a self-managing economy has not been created as yet. This does not negate possible exceptions.

EKONOMSKA POLITIKA: Is the new concept of social price control such an exception?

Bajt: The draft of the new price law essentially abandons the institutions (the criteria for the setting of prices) which had proven to be superfluous. At the same time, the social compact on the guidance of distribution could serve as a suitable example of regulating areas which probably truly do need regulation, but it is not quite clear what kind. The arguments above can be illustrated with a few problems with the system which are topical at the present time.

The first one we shall take up is the relationship between the OUR [organization of associated labor] and the OOUR [basic organization of associated labor]. The decentralization of decisionmaking in the OOUR prevents the concentration of capital and thereby stands in the way of efficient investment. Nevertheless, the opinion that the OOUR should therefore be eliminated is highly debatable. The OOUR's were not introduced solely for the sake of the

direct management by the workers, although that is not irrelevant either, but also on technological grounds. It has become possible for OOUR's from different OOUR's to link up on behalf of better utilization of capacity and in fact to form new and technologically better founded OOUR's. Let us assume that OOUR's receive a 5-percent real rate of interest on savings deposited in banks. Would they have opted for an investment project of their own when, assuming real prices of all other factors, the attainment of at least an equal internal rate of profit would be uncertain or indeed even impossible? It is much more likely that they would deposit the resources saved in the bank and thereby offer them to others for investment. Aside from preventing inefficient investment projects, the mobility of capital would be augmented, which would increase the possibility of its concentration. Under such conditions--the conditions of real prices of factors--would it be judged that the OOUR's are scattering social resources, and that therefore they should be integrated with the OOUR? I do not think so.

If disbelief is not justified by anything else, then it is at least by the fact that from the standpoint of the economy as a whole even the OOUR is an inconsiderable part and that the satisfactory functioning of the economy demands integration on an incomparably broader scale than OOUR's. What could Crvena Zastava do, although it is a large OOUR, without numerous subcontractors? We tend to forget that the economy's integration is not guaranteed by the size of the OOUR or by the degree of integration of OOUR's within the OOUR, that is, by organizational forms, but de facto by industrial cooperation based on common long-term interests, and here the legal forms of integration are less important. Were that not the case, the percentage of large enterprises in our economy would not be among the highest in the world, while the actual degree of integration of the economy is way at the tail end.

EKONOMSKA POLITIKA: The economy has established vital connections even under such conditions, but not mutual connections.

Bajt: Given the negative price of capital and also the nonequilibrium prices of other factors (imports) and products, brought about by the administrative intervention of the "system" and current economic policy, maintaining good relations with the structures of the political administration has been the most profitable activity for the economy. The economy gets everything it needs from that source--good prices, savings, credits, imported goods and technology. The only truly beneficial integration is that integration with the structures of the political administration. Entering into an agreement with the economy is a waste of time: the economy does not have anything anyway. Nor do laws on mandatory integration count for anything here. The system has to be changed, but not just one piece of legislation for another piece, but introducing the market so as to make regulation "by the system" superfluous, to make the economy dependent on its own self and on its performance.

The second example is even more topical--this is the economic employment of foreign exchange. The foreign exchange market does not exist today. The system of direct administrative allocation is in effect for approximately 55 percent of foreign exchange; most of the other 45 percent is spent by exporters themselves, and the smaller part is distributed--more or less under the table,

i.e., by means of partial markets. The optimum solution is well known from textbooks on economic theory. Exporters sell the foreign exchange they have earned, at the time when they earn it, to the banks, in essence to the central bank, and they buy the foreign exchange they need for imports at the time when the imports need to be paid for or the debt needs to be paid off from the banking system, in essence from the central bank. Foreign currencies do not occur at all in domestic transactions, nor in performance of the liquidity function. This is a practical form of the "undivided" foreign exchange market on which the gross inflow of foreign exchange constitutes the supply--and the gross imports of goods and services, including capital payments, constitute the demand for foreign exchange.

Our present situation is far from the optimum. Quite by the way, it is symptomatic here that in finding a way of creating an undivided foreign exchange market, we are turning almost exclusively to the trading of foreign currencies between enterprises, and the administrative distribution of the predominant share of foreign exchange does not bother us at all. It is obvious that the interest of the importers, not the exporters, continues to prevail in reflections concerning economic policy. Let us assume, however, that there does exist an undivided market with a uniform set of exchange rates, be they stable or unstable, it makes no difference, so that exporters and those who take credits abroad do not manage to get a higher dinar price by selling the foreign currencies they have acquired on the gray market, so that the interest rates on the dinar prices are competitive, i.e., so that in spite of inflationary losses which come about because of the drop of the domestic and external buying power (rate of exchange) of the dinar depositors are given higher real earnings than they would obtain from holding their foreign currencies abroad with correspondent firms or banks, and so that at the moment when required they can purchase foreign exchange at a uniform rate. In such a case would exporters hold on to their foreign exchange so as to finance their imports at a later date? Would they hold them abroad? Would they attempt to sell them under the table at monopoly prices to those who absolutely must have foreign exchange for marginal quantities of imported raw materials or equipment? Would it be necessary to think up criteria for (administrative) distribution of foreign exchange to finance "socially recognized needs"? Would mandatory cession of foreign exchange be necessary, regardless of whether it amounts to 55 percent or 100 percent of the total inflow? And, most important, would it be necessary for exports to be stimulated by means other than the rate of exchange? Here we should not forget that under the conditions of the large-scale negative international capital transactions the rate of exchange of the dinar was inevitably undervalued when compared to the relative prices (domestic prices compared to foreign prices).

EKONOMSKA POLITIKA: Haven't you already answered the question which you are putting?

Bajt: Yes, the answers to all those questions are negative. They thereby point the direction in which we should seek reestablishment of an undivided foreign exchange market. The alternative is obvious: either replacement of the present normative institutions (mandatory pooling for socially recognized foreign exchange purposes, distribution of foreign exchange within self-management accords or vertical production entities created de facto) by new normative

institutions (mandatory cession of all foreign exchange and universal administrative allocation of it), or the consistent conduct of a policy of equilibrium prices, the rate of exchange of foreign currencies and of money and capital, so that the need for administrative regulation, regardless of what kind, has disappeared on its own. The first alternative has been chosen in the economic employment of foreign exchange by individuals. A normative limit has been put on the disposition of foreign currencies by individuals, and interest is paid in dinars. The results did not fail to appear: foreign exchange has fled under the mattress and into foreign banks. In that way we are making it possible for the latter to extend credit to us at higher rates of interest (than the rates of interest on foreign exchange deposits) with our own foreign exchange.

Let us go on to the third example--investment decisions. We already know that the efficiency and mobility of capital increases when the price of credit--capital, i.e., the interest rate, is positive in real terms. People in the banks and in the republic administrations (the Commission of the Slovenian Executive Council for Verification of Investment Projects) are thinking up investment criteria absolutely parallel to those governing the distribution of foreign exchange for socially recognized import needs, so that the investment resources that exist would be optimally allocated under the present conditions of interest rates which are negative in real terms. If interest rates were positive in real terms, if they were in addition equilibrium rates, would it be necessary to use investment criteria, i.e., administrative allocation of investment resources?

However, the questions concerning investment decisions--with the emphasis on decisionmaking--have a much more essential significance than investment efficiency. If the price of credit is positive in real terms at the equilibrium level, which restricts investment projects to those which are efficient, they are necessarily financed from the investor's own resources, from those portions of his income which have been saved, whether in the past or those of the future. There no longer exists the possibility, typical of our conduct of economic activity in the past, for investment projects to be financed by the inflationary taking away of income from other entities. Self-management thereby becomes self-management in the literal sense of the word. Every entity makes decisions only concerning its own income, concerning the resources which it has created, and not concerning the resources of others thanks to inflationary appropriation. Appropriation of resources--of the income of others--has been made impossible.

EKONOMSKA POLITIKA: However, that appropriation of resources within the economy at the same time has been making it possible for power centers outside the economy to become stronger.

Bajt: If we are to completely examine the importance of real positive rates of interest at the equilibrium level, it is important to note that they prevent not only the decisionmaking of one set of entities concerning the income of another set, but above all the decisionmaking of entities outside the economic sphere concerning the investment projects of the economy. It is a question of decisionmaking by political structures at various levels. In a tie-up with the banks, in the final analysis with the National Bank of Yugoslavia,

they decide on investment credits, both dinar and foreign exchange, both domestic and foreign, which means that in effect they make the decisions on investment projects. The banking system creates capital through this channel. Enterprises which are investing by appropriating the income of other entities instead of their own savings can do that only with credits which the banking system provides. That would not be possible solely on the basis of their own decisions. That is, the inflationary financing of investment projects always signifies usurpation of economic decisionmaking by political structures which are not in the economy, which signifies a displacement of authentic self-management. In other words, if self-management is truly to take on life, the inflationary financing of investment projects has to be prevented, the creation of capital by the banks instead of from the savings of associated labor, and that can be achieved only with real rates of interest at the equilibrium level.

Thus we have come to the fourth problem, a very important one: the economic function of the republics and provinces, as well as of the opstinas. There is no doubt that it is their task to promote their own economy, to create conditions for the largest and soundest economic expansion, to undertake investment projects which cannot be undertaken by individual enterprises because of the considerable or predominant external effects, and so on. However, today the republics are to a large extent making altogether specific investment decisions, thereby preventing associated labor from performing its own functions. Since in the economic sense the owner of the resources must be regarded as the one who makes the decision on the surplus product, it is obvious that social ownership has thereby degenerated into ownership by the structures of the political administration. At a time when central planning no longer exists, the most important lever being used for that purpose are bank credits whereby capital is created.

EKONOMSKA POLITIKA: You feel, then, that reaffirmation of the customary functions of the bank would contribute essentially to strengthening social ownership?

Bajt: Of course, since without that lever the structures of the political administration, not only in the republics, but also in the opstinas, would relinquish the possibility of appropriating the decisionmaking which belongs to associated labor and thereby reducing self-management to a mere form. Instead of the property of the structures of the political administration, the resources would become social property in the true sense. And, as we already know now, that lever belongs to real positive interest rates at the equilibrium level.

The banks and the political structures could offer the economy unrestricted amounts of credit which in view of their position they themselves can create, but at real positive rates, equilibrium rates of interest, the economy would not wish to use them, since in any case it would have to pay them (the interest and repayment of principal) in an unchanged real magnitude out of its own income. In such a case would the basic organizational principle for decisionmaking and integration of the economy still be the principle of regional administration? Would it not gradually be replaced by decisionmaking and thereby integration of the economy on a purely economic basis, above all on

the basis of ability in the conduct of economic activity, which is manifested in the ability to save--to accumulate? In such a situation wouldn't the op-stina and republic boundaries become economically irrelevant? And, finally, wouldn't the economic functions of the territorial-administrative communities become very clearly defined thereby?

Of course, the fact that ownership is not private, but social, the fact that individual decisions (by individuals and by individual collectives) carries no or almost no individual economic liability, diminishes the effectiveness of the system, especially at a low level of economic development and at a level of individual and social consciousness that corresponds to that. At the same time, however, there are many advantages inherent in the system of a self-managed economy, not just noneconomic advantages. Under present conditions of normative institutions which prevent the operation of the most essential element of economic activity in the context of self-management, the market, it would be hard to say what is predominant. If it proved that the adverse effects are predominant, that is, if it is the case, at least in the initial periods of the system's operation, that we are unable to bring about validity or even just to create moral codes based on social ownership, the defects could always be removed by administrative measures, which would in essence be ad hoc and temporary in nature. Consistent implementation of the market principle could make even regulation in the domain of distribution superfluous.

To sum up: Insistence on rapid changes of the economic system, in the sense of normative institutions, would result in replacement of one set of institutions by another set, but it would not essentially alter the behavior of economic entities, much less noneconomic entities. If the market (economic laws) is seen to be the essence of the system of a self-managed economy, the most urgent change in the system would actually be inclusion of the market, i.e., equilibrium prices of products and above all factors, into the concept and practice of the system. The "behavior" of economic entities is primarily a function of economic factors, of the prices of products and factors. This would make it possible for associated labor to actually take over decisionmaking concerning reproduction and to prevent the meddling of noneconomic structures in its functions. At the same time, this would de facto eliminate numerous normative institutions, those that exist at present and also the ones that might be newly introduced, since they would be altogether superfluous, and it would also point up those areas and directions in which normative regulation is truly necessary.

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OIL, GAS EXPLORATION, PRODUCTION IN 1983

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[Article by Ifet Ibrahimasic, mining engineer, doctor of engineering sciences, INA-Naftaplin, visiting professor at the School of Mining and Geology of Zagreb University; Caslav Janic, mining engineer, technical adviser of the "Technology" OOUR [Basic Organization of Associated Labor] within the Work Organization "Nafta-Gas" of Novi Sad; and Damir Rajkovic, engineer, MA in engineering sciences, instructor in the School of Mining and Geology at Zagreb University]

[Text] 1. Survey of Activity of INA-Naftaplin in 1983

A survey of the activity of INA-Naftaplin in 1983 cannot overlook the facts which have characterized the very problematical operating conditions. We should emphasize in the first place that production activity has depended directly on production supplies, spare parts and technical equipment. In that respect the problem was almost the same with foreign and domestic suppliers. However, the lack of these components essential to fulfillment of annual plans for exploration of hydrocarbon deposits underground and under the seabed and to realizing the volume of petroleum and gas production is well known to the public and has recurred as a problem for a number of years now in the affairs conducted by INA-Naftaplin.

"Drilling" OOUR

Table 1 presents the results of INA-Naftaplin's drilling in 1983. Total drilling amounted to 188,539 meters, 52,529.5 meters of this exploratory drilling, that is, less than in 1982, while development drilling was more intensive, with its 136,009.5 meters.

Taken as a whole, the growth of drilling in 1982 as compared to 1983 was successful in a way. However, in terms of the relative significance of different types of drilling (exploratory and development), that degree of success is not satisfactory. When we take into account that the plan for 1983 called for 200,150 meters of total drilling, that is, 81,500 meters of exploratory drilling and 118,650 meters of development drilling, the accomplishment was still less favorable.

Table 1. Drilling Results of INA-Naftaplin in 1983

<u>Description</u>	<u>1982</u>	<u>1983</u>
1. Total drilling, in meters:	179,499	188,539
a) Exploratory drilling for petroleum and gas	71,371	52,529
b) Development drilling for petroleum and gas	108,128	136,010
2. Number of wells drilled:	109	107
a) Petroleum and gas exploratory wells	37	27
b) Petroleum and gas development wells	72	80
3. Degree of drilling success:		
a) Total wells drilled	109	107
b) Positive for petroleum and gas	57	69
c) Dry (negative) wells	28	14
d) Wells being tested and new projects	24	24
4. Number of drilling rigs in operation	16.67	16.78
5. Meters drilled per drilling rig	10,768	10,965

In 1983 there was 28,023 meters of slant drilling. This is done in order to carry out specific technical programs: drilling what are referred to as gamma wells, change of direction toward the more favorable parts of the structure, requirements imposed by the configuration of the terrain, the drilling of injection wells, detouring around jammed strings, and solving problems of gas storage.

A total of 30 slant wells were drilled. Moreover, a turbodiamond bit was used. Synthetic diamond bits were also used in turbodrilling, Rockut 216 mm and 311 mm in diameter (8.50 inches and 12.25 inches). These are bits which under the proper drilling conditions make it possible to achieve exceptionally good effectiveness.

In addition to numerous innovations of our own which were introduced to improve the technology and technological process of drilling, we should also emphasize that the first domestic bit, 309 mm in diameter, was used; it was made in the workshops of INA-Naftaplin.

Another extremely important innovation was the preparation of horizontal drilling, which will be used when the conditions of the reservoir rock make it feasible. The new tools will make it possible to increase the rate of increase of the angle from 5° to 6° per meter of drilling. Thus the technical possibilities seem to have no limits in the case of slant drilling.

In spite of the problems related to the drilling process (shortage of production supplies, spare parts and technical equipment, as well as the problematical natural conditions of operation because of the greater depths and the diversity of those conditions, etc.), satisfaction can still be expressed concerning the results achieved, since many of the technical and technological problems in drilling have been resolved exclusively with our own know-how and creativity. In the future the results of our efforts in INA-Naftaplin will depend more and more on their application. In view of the ability and number of our specialists, this idea is an obvious one.

"Production" OOUR

Table 2 shows the results of petroleum, gas and liquefied gas production by INA-Naftaplin in 1983. The production plan for 1983 called for a 20.6-percent increase over 1982 in gas production, a 6.3-percent increase for liquefied gas production, and a drop of 2.4 percent in petroleum production. However, the drop in petroleum production was 6 percent between 1982 and 1983.

Table 2. Petroleum and Gas Production by INA-Naftaplin in 1983

<u>Description</u>	<u>Actual Output</u>	
	<u>1982</u>	<u>1983</u>
Petroleum, in tons	3,047,194	2,860,468
Gas, in thousands of cubic meters:		
a) Natural gas	974,800	865,900
b) Casinghead gas	269,700	322,600
Total (a + b)	1,244,500	1,188,500
Liquefied gas, in tons	116,317	121,445

The drop in production should be viewed from one angle as an anticipated phenomenon because of the longer length of time the deposits have been exploited and because of the more problematical conditions for using technological procedures in recovering the hydrocarbons. In 1983 18 percent of all production wells had natural flow, while gas lift recovery was used in 35 percent of the wells and deep pumps in 47 of them. Of course, production activity in the exploitation of deposits by these technological procedures depends on numerous factors related to repair work, the maintenance of operating installations, the consumption of energy, spare parts and equipment, as well as various chemicals when stimulation procedures are used to increase the rate at which the fluid flows from the rocks into the channels of the wells.

About 50 percent of petroleum output is achieved by water injection of the deposits; in 1983 $4.8 \cdot 10^6 \text{ m}^3$ of water were injected. This is how a more rapid dropoff of production was avoided, at additional production costs, of course.

Along with the age of the deposits, other adverse factors are also making themselves felt more and more: the increased share of water in the petroleum, and then also sand and the settlement of limestone, etc. Under these conditions more technical and technological interventions become necessary to maintain the level of output, and many wells drop out of the process of deposit exploitation while they are being carried out.

The "Production" OOUR was also short on production supplies, spare parts and technical equipment during 1983. Taking into account all these facts which were crucial to achievement of planned production in 1983, we can also add those natural factors (the low stage of the Sava River!), so that production had to be halted in certain fields. However, thanks to the efforts of personnel in the "Production" OOUR, the worst of all was nevertheless avoided, that is, a drop in production considerably greater than the 6-percent drop which occurred.

By correcting certain shortcomings in the work process, through more effective organization of technological entities participating in the process of exploiting the deposits, and by bringing new deposits on stream it will be possible to raise the total size of production to a higher level of output.

As for gas production in 1983, the problem can mainly be boiled down to the inadequate availability of imported production supplies to INA-Naftaplin and then the lack of technical operating equipment and slowness in construction of surface gathering and dispatching systems.

If these problems related to the process of exploitation of gas deposits are resolved, production of realistically planned quantities of gas could be achieved in the coming period.

The jump in the production of liquefied gas should be attributed to the more intensive effort in the first half of 1983.

"Repair" OOUR

The flow of repair work in 1983 was in a strange relationship with the requirements of production technology related to the annual operations plan of the "Production" OOUR. The internal reports of the REPAIRS organizational unit make obvious the diversity of technological procedures, accompanied by the fast pace of field work all over the Pannonian Basin where INA-Naftaplin is conducting operations. Credit has to be given to the organization of operations in the "Repair" OOUR for the success of its activity in 1983.

"Special Mining Operations" OOUR

The increasingly complicated natural conditions for conducting special mining operations in wells on land and offshore have required that these organizational units adapt their operational programs to those conditions. Along with the same difficulties that have characterized all the technological groupings in INA-Naftaplin (production supplies, spare parts and technical equipment), in the "Special Mining Operations" OOUR many technical problems were resolved by new technological procedures in the fields of cementing, treatment of the reservoir rock, testing and logging. Particular mention should be made of the efforts of specialists in the "Special Mining Operations" OOUR who have successfully mastered the technique of consolidating unconsolidated sand saturated with gas by using the sand bed technique under very complicated conditions.

Innovations were also noted in technological processes of cementing deep wells under the conditions of immensely high pressures and temperatures.

"Geological Explorations and Development" OOUR [OOUR GIR]

All through 1983 OOUR GIR was characterized by exploratory activity in all areas where INA-Naftaplin operates. However, activity was concentrated predominantly in the depressions of the Pannonian Basin, since it is bound up with the production of petroleum and gas. We should also stress explorations

in the Adriatic Sea area (in the northwest seabed and in the areas of the so-called Jabuka, Mljet and Palagruza blocs). In the region of the Dinarids explorations were bound up with the regional pattern in establishing possible reservoir traps.

Since the activity of the OOUR GIR was concentrated in the Pannonian Basin, i.e., on development of deposits already discovered in it, those deposits and their inclusion in the process of hydrocarbon exploitation were stressed very greatly in 1983. In the context of the well-known financial difficulties, it goes without saying, the specialized and scientific analyses of numerous geological and geophysical specialists in INA-Naftaplin mastered new discoveries which have contributed to the more effective operation of this organizational unit. Worthwhile and effective technical studies and new studies on the inadequate level of exploration of the Pannonian depression have come out of that commitment to studying and exploring the Pannonian Basin. This datum is facilitating more extensive future activity in discovering new localities, i.e., a higher number of dislocated deposits within the space of the Pannonian Basin.

INA-Naftaplin's Operations Abroad

In 1983 INA-Naftaplin carried on activity under a concession arrangement in Angola and Indonesia and as a contractor in Iraq.

Explorations in the Mid-Adriatic

INA-Naftaplin's activity with foreign partners in the Yugoslav portion of the Adriatic with respect to exploratory drilling from the platform ZAGREB I began 1983 operating at the location Mirjana-1.

This activity is being carried on by the following OOUR's of INA-Naftaplin: "JABUKA," "MLJET" and "PALAGRUAZA" on the basis of a contract on joint ventures with the foreign partners AGIP (Italy), CHEVRON and TEXACO (United States) and HISPANOIL (Spain). The explorations will be conducted on a full scale in 1984 and will probably extend beyond for some time.

General Indications of INA-Naftaplin's Activity

A survey of the activity of INA-Naftaplin of Zagreb, not only in a single year, but over the period defined by the involvement of petroleum reservoir engineering in a particular area explored, might be compared with respect to the number and diversity of the engineering and technological problems to the subject matter presented at the 11th World Petroleum Congress held in London in 1983. Of course, because of the "capriciousness" of nature as to the creation of the deposits and the processes related to them, these problems are presented in a smaller scope. But there is hardly any technical and technological problem in the field of petroleum reservoir engineering presented at the 11th World Petroleum Congress which might not also be taken up in the activity of the Yugoslav petroleum industry. All the phenomena in the geological, geophysical, engineering and technological fields of exploration and exploitation of hydrocarbon deposits are encountered in our own practice as

well. Concern about the level of exploration and the level of exploitation of petroleum and gas deposits beneath land and sea is the pivotal point of INA-Naftaplin's overall activity. That is in fact the case elsewhere in the world. But reaching the extreme limits of those levels is neither simple, nor can it always be done quickly. The reason for this differentiation is manifested in the uneven level of development of the technology possessed by the various countries engaged in exploration and exploitation of hydrocarbon deposits beneath land and sea. Of course, many countries seek a way out of this situation by using the form of open economic activity to bring their own economic potential into circulation.

However, in spite of that there remains a lasting postulate that effective utilization of every country's economic potential must rely predominantly on its own technology, that is, on the productive creativity of its own work force. Of course, that postulate is related to reduction of the risks in the strategy of development through intensive economic activity. Since the natural resources which belong to a particular country must not be left unexplored, when it comes to searching for raw minerals and fuels such as petroleum and gas, appropriate activity is devoted to exploring hydrocarbon deposits in INA-Naftaplin and throughout our country.

The work organization INA-Naftaplin possesses all the elements of the economic potential urgently necessary in petroleum reservoir engineering, as will be evident in future activity through the still more effective productive results of operation.

2. Activities of the Work Organization "Nafta-Gas" in 1983 in Exploration for and Production of Petroleum, Gas and Thermomineral Waters

Introduction

The work organization's economic activity in the past year has taken place under complicated conditions for the conduct of economic activity in our country.

General economic developments in the country have had the following features:

- i. smaller growth of industrial output,
- ii. sizable rise of prices in all areas,
- iii. shortage of basic raw materials, expendables and spare parts,
- iv. expenditure out of proportion to the available means.

Along with all the results achieved in production and exploratory and production drilling we have referred to, other activities in the fields of exploration for and production of petroleum, gas and thermomineral waters also constitute an important contribution to the organization, stabilization and invigoration of the entire country's economic activity. With its nine basic organizations, which have a work force of 4,600, the work organization realized a gross income of 32,732,891,000 dinars, and a net income of 15,169,162,000 dinars.

I. Exploration for Petroleum, Gas and Thermomineral Waters

Explorations for petroleum, gas and thermomineral waters were accompanied by preliminary activities consisting of adequate geological and geophysical preparation and monitoring the analytical processing of results obtained by mining-geological operations, which also necessitated the drafting of the relevant programs, analyses, studies, detailed reports, etc.

A. Petroleum and Gas Exploration in the Country

Petroleum and gas explorations were conducted mainly within SAP [Socialist Autonomous Province] Vojvodina, and to a considerably smaller extent in other regions of the country.

1. Geophysical Testing

Within Vojvodina 752.8 km of reflection seismic testing was done by the method of multiple overlapping (CDP 1,200 percent and CDP 2,400 percent). In addition, geoelectric mapping was done at 200 probes. These operations were conducted mainly in the Banat region, and that in its northern portion.

Aside from this testing, 149.8 km of testing was done in the Morava and Danube valleys in Serbia outside SAP Vojvodina, by the method of multiple overlapping (CDP 2,400 percent).

In the continental portion of Montenegro along the coast, in the area of Ulcinj and Tivat, 61.2 km of seismic testing was also done; it was experimental in nature in order to establish basic parameters that would ensure better quality in this area which is complicated from the standpoint of seismic geology.

2. Drilling

In 1983 petroleum and gas exploration with exploratory drilling in order to discover new deposits or to define those previously discovered was conducted in SAP Vojvodina, where 25 wells were drilled. At the same time only one well was drilled in Serbia proper. The highest pace of operations in SAP Vojvodina was in the area of northern Banat, where 16 wells were drilled.

The other nine wells were drilled in the area of southern Banat, Backa and Srem.

Of the 25 wells drilled, 8 were eliminated because they were negative, while the others revealed the presence of hydrocarbons at new or previously discovered deposits, and for that reason they were completed.

Aside from drilling last year to define petroleum and gas deposits already discovered, 81 intervals were tested at 32 wells.

B. Petroleum and Gas Exploration Abroad

Outside the country Nafta-Gas has been carrying on continuous exploration in Algeria, while in Angola it is collaborating with Naftaplin and has a certain share defined as a percentage in offshore exploration. The entire activity in the two countries consists of seismic testing, drilling exploratory and confirmation wells, and testing those wells.

In Algeria activity was in two areas of exploration. A second exploratory well was drilled in one of them. Testing the structures being explored at this well yielded results which did not confirm that the well was commercial, so the well was eliminated as negative.

In the second area being explored 287 km of seismic testing was done by the method of multiple overlapping (CDP 2,400). The field work was carried out by the Geophysics Institute of Belgrade, in whose computer center the seismic data were also processed.

Following completion of the processing of the data recorded in the field a complete interpretation was made of all the data and the location determined for the first exploratory well, which will be drilled during 1984.

In Angola activity from previous years was continued last year along with additional geophysical testing and the drilling of exploratory and confirmation wells in both areas being explored.

In all, three wells have been drilled in the exploratory area known as Bloc-I; two of them have been classified as commercial, and one abandoned as negative. In the second area being explored, Bloc-III, six exploratory wells have been drilled, one of which was declared commercial after testing, while the others were eliminated as negative. At the same time three confirmation wells have been drilled, two of them confirming the positive nature of the structure or expanding the size of the structures already found.

C. Exploration for and Use of Thermomineral Waters

The exploratory operations conducted during last year included the drilling of five hydrothermal wells, on which a total of 4,750 meters were drilled. Four of those wells will be completely equipped for use of thermal water since quite favorable results were obtained at them with respect to the rate of discharge, the outlet temperature, and also the quality of the water.

Thanks to construction of hydrothermal systems, the water from those wells is being used to heat agricultural facilities, in industry (both as thermal energy and in the manufacturing process), and for athletic and recreational purposes.

II. Field Development

Activity in this field was carried on last year to further develop petroleum and gas fields so as to achieve the most optimum conditions for petroleum and

gas production. Development drilling was done in the fields to round out the existing network of wells.

In all, 35 development and production wells were drilled, 32 of which were equipped and put into production.

The status of the production capabilities of the fields has been monitored regularly through the drafting of periodic studies on hydrocarbon reserves and preparation of major engineering projects, studies and analyses on the state of development of the various fields, which has helped in achieving the corresponding production of petroleum and gas.

These tasks were performed because the physical parameters of reservoir rocks were worked out competently, and use was made of results obtained in mathematical modeling and the results of hydrodynamic testing of petroleum and gas wells.

III. Petroleum and Gas Production

In 1983 petroleum output was 1,276,796.2 tons, which is 2,496.2 tons, or 0.2 percent, greater than the amount planned.

It is worth pointing out that last year the production of crude petroleum dropped from the previous year for the first time in history.

The principal causes of this decline lie in the following:

- i. The new reserves discovered in the previous period and brought into production were inadequate in their size and could not make up for the natural decline of petroleum production in the old fields.
- ii. The shortage of equipment and production supplies were one reason why certain production facilities (wells, gathering systems) could not be ready in time to go into regular production.

Gas production in 1983 was 958,197,294 m³, which is 29.5 million m³, or 2 percent, more than was planned.

However, output was down 2 percent from the previous year. The entire production of gas from gas fields throughout the entire year varied according to the quantity of gas imported and according to fluctuations in consumption of major consumers in the transportation system.

Table 3

<u>Description</u>	<u>Actual Production</u>	
	<u>1982</u>	<u>1983</u>
1. Petroleum, tons	1,303,284	1,276,796
2. Gas, thousands of cubic meters	982,787	958,197
a) Natural	775,294	743,125
b) Casinghead	207,493	215,072

Table 4. Results Achieved in Drilling

<u>Description</u>	<u>1982</u>	<u>1983</u>
1. Total meters drilled:		
a) Petroleum and gas exploration	125,004	110,842
b) Subsurface water exploration	32,417	46,964
c) Petroleum and gas development	3,308	4,750
89,279	59,128	
2. Number of wells drilled:	78	65
a) Petroleum and gas exploration	16	25
b) Subsurface water exploration	5	5
c) Petroleum and gas development	57	35
3. Drilling success:		
a) Positive--petroleum and gas	61	49
b) Positive--subsurface water	5	5
c) Negative	10	11
d) Being tested--petroleum and gas	31	32
4. Number of drilling rigs in the country:	10	
Petroleum and gas	9	9
Subsurface water		1
5. Number of drilling rigs abroad:		
Services	1	1
Leasing	1	1
6. Meters drilled per rig in the country	13,522	11,084

IV. Construction of Capital Investment Projects

At more than 19 localities for the production of petroleum, gas and thermomineral water 36 different programs and projects were carried out to meet the needs of current production. They covered construction of new gathering and dispatching stations, and then the expansion and reconstruction of existing ones.

It can be said that all the projects built, the equipment and the necessary supplies were mainly obtained on the domestic market. Where it was necessary to import equipment, those facilities were as a rule behind schedule in their construction.

V. Basic Organizations in the Field

The specialized organizations of associated labor "Drilling," "Special Operations," "Hydroprobe," "Maintenance" and "Construction Work"--each within its respective activity, performed tasks which had a direct impact on the results achieved in exploration and production of petroleum and gas last year.

Aside from activities related to domestic petroleum and gas production, certain of these organizations continued or commenced activities in marketing their services even outside our country.

Thus the OOUR's "Drilling" and "Special Operations" continued work in Jordan to drill and test wells each with a rig for drilling and well repair, while

"Maintenance" completed negotiations for marketing its services in maintaining drilling rigs in Algeria to meet the needs of that country's national company.

Activity to find room outside the country for still greater marketing of services will continue in 1984 as well. Certain steps are being taken to that end so as to equip them as well as possible for that purpose.

3. Drilling Results in Yugoslavia in 1983

The principal characteristic of drilling in 1983 was the further reduction of the total number of meters drilled, which was 2 percent from the previous year (Table 5). The drop in the number of meters drilled by "Nafta-Gas" (a drop of all of 13 percent from 1982) contributed to this, while in INA-Naftaplin the scale of operations increased 5 percent over the previous year.

There is a notable difference in the pattern of drilling between the two work organizations. In INA-Naftaplin there was a considerable increase in the amount of development drilling (all of 26 percent), while the volume of exploratory drilling was at the same time down 26 percent.

In "Nafta-Gas" the pattern was the reverse. The number of meters of exploratory wells increased all of 45 percent, and the amount of development drilling experienced a drop of the same proportion. Another characteristic of drilling in 1983 lay in the 25-percent drop in the number of negative wells as compared to 1982. This means that more and more attention is being paid to preparation of locations for the various wells, and at the same time it is contributing considerably to reduction of drilling costs.

The shortage of production supplies, spare parts and technical equipment, the more complicated natural conditions for operation because of the greater depths, and the diversity of those conditions, etc., had an impact on the poorer overall results in drilling. [Sentence reworked by translator]

4. Petroleum and Gas Production

Total petroleum production in the SFRY was down 5 percent and gas production down 4 percent in 1983 as compared to 1982. The drop in production occurred mainly because of the following:

- i. the ever greater age of the fields being exploited;
- ii. the increasingly problematical conditions for the use of technological procedures of hydrocarbon recovery;
- iii. the ever more intensive manifestation of adverse factors accompanying production at old fields, which are the increased share of water in the petroleum, and then sand, the settlement of limestone, etc. This requires frequent shutdowns to carry out technical and technological intervention;
- iv. the inadequate scale of newly discovered reserves put into production which would be large enough to make up for the natural decline of production, and so on.

In addition, we dare not forget the difficulties that have existed in petroleum and gas production related to the purchasing of production supplies, spare parts and technical equipment, which also had an impact on the results achieved in production.

Table 5. Drilling Results in the SFRY in 1983

<u>Drilling Results</u>	<u>1982</u>	<u>1983</u>	<u>Index 83/82</u>
INA-Naftaplin			
1. Total drilling done, in meters:	179,499	188,539	105
a) Exploratory drilling	71,371	52,529	74
b) Exploratory for underground water	--	--	--
c) Development drilling	108,128	136,010	126
2. Number of wells drilled:	109	107	98
a) Exploratory	37	27	73
b) Underground water exploration	--	--	--
c) Development wells for petroleum and gas	72	80	111
3. Rate of success of drilling:*	109	107	98
a) Positive wells	62	74	119
b) Positive for underground water	--	--	--
c) Negative wells	47	33	70
d) Ratio of negative wells to all wells drilled, in %	43.10	30.84	--
4. Number of rigs in operation	16.67	16.78	100
5. Number of meters drilled per rig	10,768	10,965	102
"Nafta-Gas"			
1. Total drilling done, in meters:	125,004	110,842	87
a) Exploratory drilling	32,417	46,964	145
b) Exploratory for underground water	3,308	4,750	144
c) Development drilling	89,279	59,128	66
2. Number of wells drilled:	78	65	82
a) Exploratory	16	25	156
b) Underground water exploration	5	5	100
c) Development wells for petroleum and gas	57	35	61
3. Rate of success of drilling:*	78	65	32
a) Positive wells	61	49	80
b) Positive for underground water	5	5	100
c) Negative wells	12	11	92
d) Ratio of negative wells to all wells drilled, in %	16.4	18.3	--
4. Number of rigs in operation	10	10	100
5. Number of meters drilled per rig	12,500	11,084	89

Table 5 (continued)

<u>Drilling Results</u>	<u>1982</u>	<u>1983</u>	<u>Index 83/82</u>
Total			
1. Total drilling done, in meters:	304,503	299,381	98
a) Exploratory drilling	103,788	99,493	96
b) Exploratory for underground water	3,308	4,750	144
c) Development drilling	197,407	195,138	99
2. Number of wells drilled:	183	172	92
a) Exploratory	53	52	98
b) Underground water exploration	5	5	100
c) Development wells for petroleum and gas	129	115	89
3. Rate of success of drilling:*	187	172	92
a) Positive wells	123	123	100
b) Positive for underground water	5	5	100
c) Negative wells	59	44	75
d) Ratio of negative wells to all wells drilled, in %	32.40	26.30	--
4. Number of rigs in operation	25.69	25.78	100
5. Number of meters drilled per rig	11,409	11,179	98

* The wells being tested were distributed 20 percent to positive and 80 percent to negative wells.

Table 6. Petroleum and Gas Production in the SFRY

<u>Petroleum Production (10³ tons)</u>	<u>1982</u>	<u>1983</u>	<u>Index 83/82</u>
INA-Naftaplin	3,047	2,860	94
"Nafta-Gas"	1,303	1,278	98
INA-Naftaplin, Lendava	--	--	--
	4,350	4,138	95
<u>Natural Gas Production (millions of m³)</u>			
INA-Naftaplin	1,245	1,189	96
"Nafta-Gas"	983	958	97
INA-Naftaplin, Lendava	--	--	--
	2,228	2,147	96

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DATA ON OIL REFINING IN 1983

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[Article by Ivan N. Mijatovic, coordinator of industrial refining of petroleum and gas, Development Sector of the Work Community of Joint Staff Services of "Nafta-Gas" Complex Organization of Associated Labor, Belgrade]

[Text] According to the available figures on petroleum refining in Yugoslavia's refineries during 1983 (there were seven refineries in operation), the volume of petroleum refined was almost completely identical to the volume of refining in 1982.

The stagnation in the level of refining occurred in spite of the fact that the Skopje refinery, which in 1983 refined about 1 million tons of crude petroleum, went into regular operation. Table 1 shows the individual capacity of the refineries based on the input of crude petroleum.

Table 1. Operating Refinery Capacity in 1983

<u>Refinery</u>	<u>Capacity, in tons</u>
INA refinery at Rijeka	8,000,000
INA refinery at Sisak	6,700,000
"Nafta-Gas" refinery at Pancevo	5,500,000
"Nafta-Gas" refinery at Novi Sad	1,050,000
Skopje refinery	2,500,000
Energoinvest--Bosanski Brod refinery	2,100,000
INA refinery at Lendava	600,000
Total	26,450,000

In all, 12.77 million tons of crude petroleum were refined in all the refineries during 1983. Only 9,021,500 tons of this amount were imported, both from the bilateral payments area and from the convertible payments area, while 3,750,000 tons of domestic production were refined, which yields the total of 12,773,500 tons of crude petroleum which were refined. By comparison with 1982, when 12,762,300 tons of crude petroleum were refined, the growth of crude petroleum refined in refineries is only 11,200 tons, that is, less than 0.1 percent. Consequently, refinery refining of petroleum in Yugoslavia is

holding at the lowest level since 1979, when a very sharp drop began in the volume of petroleum refining from nearly 16 million tons a year to 12.7 million tons in 1982 and almost the same amount in 1983 (the figures have been published in NAFTA in previous years--Vol 30-34).

The conditions for the conduct of economic activity and administrative measures have also been reflected in the volume of petroleum refined in 1983 in almost the same way as they affected crude petroleum, while the refinery mix of products produced and certain relations within that pattern have even deteriorated.

The extent to which the volume of refining affected the operating efficiency of refineries can be judged from the level of utilization of available refinery capacity, which in 1983 was only 48.3 percent. As we shall be expounding below, the operating efficiency of our refineries has been influenced not only by the low level of supply of crude petroleum, but also by the discontinuity of operation because of the irregular supply, all of which has been reflected in the adverse indicators of economic performance of most of our refineries.

Table 2. Basic Product Mix of Refinery Output in the SFRY

<u>Product</u>	1982		1983			<u>Index</u>
	<u>Millions of Tons</u>	<u>%</u>	<u>Millions of Tons</u>	<u>%</u>		
Motor gasoline	2,039.5	15.8	1,736.6	13.5	85.4	
Jet fuel and kerosene	277.0	2.2	222.3	1.7	77.3	
Diesel fuels and distillate heating oils	3,881.4	30.2	3,938.9	30.7	101.7	
Heating oil--mazut	3,635.4	28.2	3,607.6	28.1	99.6	
Other products	1,955.7	16.6	2,237.7	19.0	114.7	
Total for the market	11,789.0	91.5	11,743.1	91.3	99.6	
Internal consumption	892.9	6.9	928.4	7.2	104.0	
Refining losses	198.7	1.6	184.0	1.5	92.6	
Total refining in refineries	12,880.6	100.0	12,855.5	100.0	99.8	

Table 2 gives a survey of the production of the principal petroleum products including internal fuel consumption and refining losses. We did not take into account here seasonal fluctuations of the various products, nor changes in the share of particular products which occurred as a result of administrative measures restricting the consumption of white products, especially when rationing was introduced in the form of fuel coupons.

Total refining was somewhat greater than the quantity of crude petroleum which the refineries received in 1983. The increase occurred under the heading of recovery of losses from the previous year and also precise balancing of the fuel consumed. In 1983 only 12,773,500 tons of crude petroleum were refined, while the total yield in refining was 12,855,500 tons. Consequently, an increase in refining of 82,000 tons is shown because of the recovery of losses previously indicated (slop [given in English in the original]) and because of overestimation of internal consumption.

Viewed in absolute amounts, petroleum refining, according to the survey in Table 2, was 25,100 tons less in 1983 than in 1982, which is about 0.2 percent and once again is negligible. On the whole it can be said that total refining of petroleum remained unchanged in 1983, that is, at the 1982 level.

There was a significant drop over the previous year in the production of motor gasoline; in 1983 the output of this product, which is the most profitable for our refineries, was down 302,900 tons. Expressed in percentages, the drop of production was nearly 15 percent from the previous year. In other words, less motor gasoline was obtained from the same quantity of crude petroleum, which means that this could be represented as the complete absence of gasoline production by one refinery with a reforming facility on the scale of 250,000 tons a year, or that in terms of the proportion of motor gasoline produced, this is equivalent to refining 2 million tons less of crude petroleum.

In 1983 the gasoline reforming installations at almost all refineries were utilized at slightly over 50 percent, and the influence of the operation of two secondary refining capacities--fluid catalytic cracking, amounting to about 1.5 million tons--which went on stream in 1983, could not have the economic importance that was anticipated. Given this product mix in the refinery refining of petroleum, the share of motor gasoline fell to a very low 13.5 percent, which by every criterion is an unfavorable yield in the production of petroleum products. This situation in gasoline production in the refinery refining of petroleum during 1983 is a direct consequence of restriction of the market for this most valuable refining product.

The output of jet fuel and kerosene recorded a still larger drop in 1983 than that mentioned for motor gasolines. A drop in the production of these products from 1982 was 54,700 tons, or 19.7 percent. At the same time there was also a drop in the production of jet fuel relative to total petroleum refined from 2.2 percent to only 1.7 percent. The drop in jet fuel production resulted from the fact that our refineries do not have an economic incentive to produce this important product.

Under the heading of distillate fuel production, which includes the diesel fuels, household heating oil and extralight heating oil, there was an increase in the quantity produced in 1983 on the product lists of our refineries. The growth of the production of distillate oils was not large and totaled 57,500 tons, or about 1.5 percent of 1982 output. In that way the total share of these products in petroleum refining reached 30 percent. The growth of production occurred exclusively for diesel fuels, mostly at the expense of the output of the distillate heating oils, a difference amounting to all of 52,300 tons compared to 1982, which is certainly a constructive trend toward reducing the consumption of a quality grade of a high-calorie fuel which corresponds to the fuel for diesel engines. The effect which retail price policy has had on the restructuring of consumption and thereby of production toward a more expedient use in terms of energy is evident here.

A total of 3,211,200 tons of diesel fuel were produced, which amounts to 25 percent of the petroleum refined. Compared to the previous year, the growth of production of diesel fuel was 110,000 tons, representing a large

contribution by our refineries to furnishing what is the most important motor fuel for the national economy.

The production of furnace oils--mazut, which is obtained from the residue of distillation, dropped slightly by comparison with 1982 output. The total drop in mazut production was 27,800 tons, or less than 0.9 percent. It is obvious that the very pronounced demands of the branches of the economy for which mazut is indispensable do not allow achievement of a better yield of white products at the expense of black products. The possibilities for improving the mix of refinery products which have been taken advantage of in the processes of our refineries, and thereby the possibility for more optimum utilization of petroleum as the most expensive form of energy, are being combated by the needs of the market, which is better suited by refineries of the old processing configuration, i.e., of the "hydroskimming" type, which is what the majority of our refineries were until recently, rather than the "hydrocracking" type which with great investment efforts we have managed to achieve at most Yugoslav refineries. In this way the share of mazut in total petroleum refining has held at 28 percent. In other words, there have been no very evident effects as to the depth of refining which the newly constructed facilities for secondary refining were supposed to achieve.

As for the miscellaneous products, which include LP gas, primary gasoline, special gasolines and solvents, aromatics, asphalts, lubricants and oils, paraffin and petroleum coke, there was a sizable growth of production: 282,000 tons, or 14.5 percent. Since the unit value of each of the products of refining in the category of "miscellaneous products" is higher than the price of the raw material, especially in the case of furnace oil, which accounts for a sizable portion of these products, this group represented an extremely large contribution to the effectiveness of our refineries in forming capital in 1983. At least half of the previous large drop in the production of this group of refinery products was made up last year at the refineries. However, these results are not favorable in all respects, since the large growth of primary gasoline, 178,000 tons over 1982, has a very adverse effect on the ability of refinery processing as a whole to form capital. The growth of production of primary gasoline at the same time shows where the major portion of the gasoline fraction has gone. The growth of production of primary gasoline was achieved at the expense of production of motor gasolines, thus increasing the operating losses in our refineries.

Because of the irregular supply of crude petroleum and of the resulting unscheduled interruptions of refinery operation, associated with low utilization of refining capacity and the startup of new refinery installations for both primary and secondary refining, there was an unexpectedly high growth of internal consumption of fuel in our refineries. The growth of internal consumption increased 35,000 tons, or nearly 4 percent, which has no justification in terms of process technology when less motor gasolines and jet fuel were produced. The significant effects of the efforts made previously to reduce internal fuel consumption in our refineries have largely been offset in this way. There was a particularly evident growth of internal consumption at refineries with a more pronounced discontinuity in operations caused by unscheduled shutdown of installations because of cessation of the inflow of crude petroleum.

Under the heading of refinery losses there was a significant drop from the previous year, which is certainly a constructive result. However, if we take as our point of departure the fact that refining has been less intensive, especially from the standpoint of reducing the refining of the gasoline fraction, since the lower output of LP gas in 1983 also meant less refinery gas burned at flares, so that the losses were smaller. Nevertheless, in spite of these facts, the 8-percent reduction of refinery losses is indicative of the astute business operation of our refineries and the attention which has been paid to recovering a portion of the losses from the previous year. The reduction of refinery losses of all our refineries to 1.5 percent of the input raw material represents an important achievement, but compared to the potential there is still room here for further reduction, especially in more efficient use of refinery gases and improved handling of crude petroleum and petroleum products.

The relations in output between products used for energy and those used as raw materials, i.e., the nonenergy products of refineries, are shown in Table 3, which covers only refinery output for the market or for further processing in other branches of industry.

Table 3. Ratio Between Energy and Nonenergy Products

Refinery Products	1982		1983			Index
	Thousands of Tons	%	Thousands of Tons	%		
Energy products	10,052.8	85.3	9,690.2	82.5	96.7	
Nonenergy products	1,736.2	14.7	2,052.9	17.5	119.0	
Total	11,789.0	100.0	11,743.1	100.0	--	

These relations in Table 3 exclusively embrace that portion of refinery output destined for the market and given in Table 2; that is, it did not take into account either internal fuel consumption in the refineries or the refinery losses. The reason for this is that consumption and losses in the refineries do not represent refinery production, but consumption that occurs in the course of petroleum refining in the refinery.

According to Table 3, there was a large growth of almost 20 index points in the production of nonenergy products and a corresponding drop in the total quantity of fuel in 1983. In all, the 1983 drop in the output of energy products was 362,200 tons--a quantity which approximately corresponds to the reduced production of motor gasolines and jet fuel. Given the same volume of crude petroleum refined, the growth in the quantity of nonenergy products in the output of refineries obviously influenced the quantities of liquid fuels available which were intended for the market and the economy as a whole during 1983.

The problematical operating conditions under which refinery production was achieved during last year and the relations which prevailed on the liquid fuel market were directly reflected in the effects of refinery operation. In that context our refineries must be applauded for seeking out opportunities for

larger production of those products which can be marketed so as to improve accumulation at a time when utilization of refinery capacity is low and restrictive measures are in effect concerning the sales of white products.

Since better effects could not realistically have been achieved within the relatively narrow space between the potential supply of crude petroleum and the needs of the market with respect to the product mix and quantity, the performance of the Yugoslav refineries in 1983 can as a whole be called successful and adapted to the operating conditions of the petroleum industry as a whole. Evidence of this can be found in the fact that the Yugoslav refineries produced 91 percent of all the products sold on the Yugoslav market during 1983. If we take into account that the quantities of products which are lacking made up with imports primarily consisted of seasonal fluctuations, as well as the need for critical fuels and the unsatisfactory product mix of our refinery output because of the low volume of refining as a whole, we can judge correctly that the effort made by the collectives of our refineries has been aimed at the best possible supply of the market and at the largest possible results in terms of the economic efficiency of petroleum refining. Especially since the terms and conditions under which crude petroleum is purchased often include the seller's requirements that he market a portion of the products from his own refinery output.

In addition to the problems with the raw material, our refineries in 1983 also confronted other problems in their operation; because of the complicated foreign exchange situation that has come about because of the absence of the foreign exchange market, it was much more difficult to purchase imported additives, certain chemicals, catalysts, spare parts and replacements for worn-out equipment, above all automatic equipment and instruments. However, by making great efforts the refineries did nevertheless overcome these problems with relative success, so that there was no very sizable or lasting drop in the quality of refinery products or production as a whole.

All we have said contributes to examination of the size of the functions which have been performed within the Yugoslav refineries and in achieving successful business performance, although the degree has not been altogether satisfactory. The results of refinery operation in 1983 indicate that in future refining must be oriented primarily toward the highest possible economic efficiency, along with the most optimal possible refining of the crude petroleum, which still remains the most important value item in every calculation of the improved business performance of petroleum refineries.

Note:

Material developed by the business community of Petrolunion and prepared to meet the needs of the General Association of Organizations of the Yugoslav Petroleum Industry was mainly used in preparing this article.

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YUGOSLAVIA

DATA ON CONSUMPTION OF OIL PRODUCTS, 1983

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[Article by Vojteh Brajcic, MA in economic sciences, vice chairman of the business board of INA-Commerce, Zagreb]

[Text] A) Petroleum Product Consumption in 1983

The past year again brought a considerable new increase in the prices of petroleum products to the Yugoslav petroleum product market, but the prices--and this has incidentally been true in the last several years--did not exert the sole influence on the drop in consumption which occurred. The restrictive measures governing consumption, the sale of products in exchange for coupons and other measures to reduce consumption of petroleum products and thereby to reduce the expenditures of foreign exchange to import petroleum, had a considerably greater influence on consumption than the (high) prices. Moreover, there were also occasional shortages of petroleum products on the Yugoslav market, especially furnace oils (mazut), but certain other articles as well. These measures were felt most drastically in the consumption of motor gasolines, whose consumption per vehicle dropped to only 500 kg (Table 1) or to half of the quantity which our automobile owners consumed in 1973.

In all, 1.732 million tons of motor gasolines were consumed in 1983, as against 2.091 million tons in 1982, or 17 percent less.

Less household heating oils were also consumed: a total of 1.112 million tons as against 1.192 million tons in 1982, while diesel fuel consumption mainly remained at the same level of 3.02 million tons.

We also recorded a drop in the consumption of mazut from 5.4 to 5.1 million tons.

The other petroleum products mainly held to the same level of consumption.

There were no very essential changes in the pattern of consumption. Mazut continued to have the highest share at 37.7 percent, followed by gas oils with 30.4 percent, gasolines 12.7 percent, and so on.

Total petroleum product consumption on the Yugoslav market in 1983 was 13.572 million tons, as against 13.902 million tons in 1982, or a drop of 2 percent.

Consumption as a source of energy accounted for 11.7 million tons [number calculated and corrected by translator], or 86 percent, while the nonenergy remainder was 1.862 million tons, or 14 percent.

Last year 1.747 billion m³ of natural gas were produced, while imports amounted to 2.737 billion m³, so that total gas consumption was 4.484 billion m³, as against 4.222 billion m³, in 1982, or a rise of 6 percent.

B) Share of Distributors in Sales of Petroleum Products on the Yugoslav Market in 1983

According to the figures of Petrolunion,* distributors in Yugoslavia last year sold a total of 11,885,657 tons, which is 4 percent less than a year previously, when these specialized work organizations sold 12,385,268 tons of petroleum products on the Yugoslav market.

The share of the individual distributors in total sales, taken as a whole and ranked, does not appear to have changed essentially: INA's network for petroleum products and gas accounted for the largest share of sales; in 1983 it sold 3,439,863 tons, or 28.9 percent of total sales.

Next came Jugopetrol of Belgrade with a 23.0-percent share and sales of 2.7 million tons; Energopetrol of Sarajevo with a share of 11.3 percent, Petrol of Ljubljana with 10.9 percent, Naftagas-Sales of Novi Sad with 10.5 percent, Makpetrol of Skopje with 10.3 percent, Jugopetrol of Kotor with 2.8 percent, and Istra-Gasoline of Koper with 2.3 percent.

Compared to 1982, when INA's network sold 3.44 million tons, or 6 percent more, its market position has continued to deteriorate, and the share dropped 1.6 percent, or 220,000 tons. Aside from INA's network, this tendency toward a declining share on the market was also evident for Energopetrol of Sarajevo, whose share fell from 12.2 percent in 1982 to 11.83 percent in 1981 and also Naftagas-Sales of Novi Sad, whose share of the market dropped from 11.1 percent to 10.5 percent.

Other work organizations in the distribution sphere of the Yugoslav petroleum industry maintained or increased their share over the same period: Petrol of Ljubljana from 10.7 percent to 10.9 percent and Makpetrol of Skopje from 8.3 percent to 10.3 percent.

Distributors relying on refining by INA saw a reduction of their share of the market over the last 3 years from 49.7 percent to 44.9 percent, a drop of 4.8 percent or about 600,000 tons, relative to the current level of our consumption of petroleum products.

This tendency to lose positions on the market gained previously in this year and all difficult years for the petroleum branch of the economy, when all distributors are operating at reduced utilization of capacity, is placing the INA

* GLASNIK POSLOVNE ZAJEDNICE PETROLUNION [HERALD OF THE PETROLUNION BUSINESS COUNCIL], Belgrade, No 365-366, pp 4-5.

network, and indeed certain other distributors as well, in a still more difficult situation, on the margin of profitability, and certain OOUR's [basic organization of associated labor] are in fact already below that line.

Table 1. Motor Gasoline Consumption Per Vehicle in Yugoslavia

<u>Indicator</u>	<u>1973</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
Total gasoline consumption, in thousands of tons	1,465	2,338	2,329	2,118	2,142	2,091	1,732
Number of automobiles, in thousands of tons*	1,071	2,033	2,196	2,345	2,501	2,625	2,750
Consumption per vehicle, in kg	1,369	1,150	1,060	904	859	797	630
Adjusted consumption per vehicle, in kg**	939	878	820	690	680	648	500
Index number:							
Consumption, 1973 = 100	100	94	87	73	72	69	53
Per vehicle, 1978 = 100	107	100	93	78	77	74	57

* Average number of vehicles during the year (estimates for 1983 and 1982).

** The adjustment was made by singling out the gasoline consumed by other consumers (motorcycles, various other vehicles and motors, and then foreign tourists, transit, etc.).

Table 2. Consumption of Petroleum Products in Yugoslavia in 1983, in thousands of tons

<u>Product</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	Index 83/82	Pattern of Consumption	
						<u>1983</u>	<u>1982</u>
Primary gasoline	424	469	522	635	122	4.7	3.8
Aviation gasoline	18	18	18	18	100	0.1	0.1
Motor gasoline 86 octane	506	516	491	390	80	2.8	3.5
Motor gasoline 98 octane	1,612	1,626	1,573	1,342	85	9.9	11.3
Total motor gasoline	2,118	2,142	2,091	1,732	83	12.7	14.8
Special gasoline and white spirits	64	78	70	78	111	0.6	0.5
Jet fuel and kerosenes	351	328	290	302	105	2.2	2.1
Diesel fuel	2,949	2,810	2,990	3,020	101	22.2	20.9
Extralight heating oil	1,695	1,396	1,192	1,112	93	8.2	8.2
Total gas oils	4,644	4,206	4,192	4,132	99	30.4	29.1
Furnace oil (mazut)	6,293	5,355	5,400	5,122	95	37.7	38.8
Furnace oil minus internal refinery consumption	5,785	4,826	4,875	4,592	84	33.8	35.0

Table 2 (continued)

<u>Product</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>Index 83/82</u>	<u>Pattern of Consumption</u>	
						<u>1983</u>	<u>1982</u>
Asphalt	638	602	504	528	103	3.9	3.7
Motor oils	111	110	108	103	95	0.8	0.8
Lubricant oils	254	298	283	344	122	2.5	2.0
Lubricant greases	10	10	11	8	72	0.1	0.1
Paraffin	11	14	13	14	109	0.1	0.1
Liquefied gas	392	420	414	404	98	3.0	3.0
Other	179	180	150	152	100	1.2	1.1
Total	15,507	14,230	13,902	13,572	98	100.0	100.0
Energy consumption	13,816	12,469	12,234	11,710	96	86.0	88.0
Nonenergy consumption	1,691	1,761	1,668	1,862	112	14.0	12.0

* Estimate made for internal refinery consumption.

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YUGOSLAVIA

DATA ON COAL RESERVES, PRODUCTION

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[Article by Drago Ljubic and Dejan Soc, mining engineers, INA-Naftaplin, Zagreb]

[Excerpt] If we are in fact going to provide a partial review of "Yugoslavia's Long-Range Strategy for Energy Development," we must emphasize that this document is the result of an unusually extensive effort, since the authors did not have a prior document of this kind that had been continuously revised on the basis of the most recent data, as is the normal practice in the world.

We should also stress that a number of sections have been defined very precisely and do not leave questions open that might be discussed, but there are also those. And then certain sections of this document contain exceptional ideas, precise analyses of the problems and suggestions for solving them, which deserve the greatest attention, but they have not been given that kind of treatment in the conclusions, i.e., it seems that they have not been sufficiently emphasized.

This remark may seem more or less formal in nature, but that is not the case when we take into account the fact that many readers are more oriented toward the conclusions themselves than toward a careful study of complete lengthy texts. We will be pointing out these examples further on, after a review of certain sections where more room has been left for discussion.

One of the essential issues is the lignite production required by the balance in the year 2020 at the level of $280 \cdot 10^6$ tons, which is not in line with the reserves now on the "balance," as the authors of the document point out, but it is not in line either with the reserves "not included in the balance" and "potential" reserves. Aside from that this production contradicts the table "Possible Coal Production" (p 135), which is as follows:

Table 1. Possible Coal Production, 10^6 tons

Type	1980	1985	1990	2000	2020
Bituminous or better	0.39	0.8	0.8	0.8	0.8
Brown	9.66	13.0	15.0	22.0	27.0

Table 1 (continued)

Type	1980	1985	1990	2000	2020
Lignite	<u>36.95</u>	<u>68.4</u>	<u>124.0</u>	<u>217.2</u>	<u>242.2</u>
Total	47.00	82.20	139.8	240.0	270.0

This table shows that a production of $242 \cdot 10^6$ tons of lignite is possible in the year 2020, while on p 163 it says:

"Lignite Production

"The rapid growth of lignite production is one of the key problems in the fuel and power industry. On the basis of the energy balances we need to achieve the following production of lignite:

"1985 about 54.0×10^6 tons
 "1990 about 81.0×10^6 tons
 "1995 about 124.0×10^6 tons
 "2000 about 155.0×10^6 tons
 "2010 about 245.0×10^6 tons
 "2020 about 280.0×10^6 tons, and thereafter:

"... certainly we should not neglect further explorations for lignite, since the exploitable reserves known today are sufficient to guarantee the level of production achieved in the year 2020 for only another 10 years or so after that, under the additional proviso that lignite has been furnished for the 25-year life of those installations built before the year 2020. That is, if new feasible reserves are not discovered, lignite production will have to be cut back to less than one-third of the production achieved in the year 2030 for all the feasible reserves known today to be exhausted by the year 2060."

As we see, there is quite a discrepancy between the two tables above.

So that our discussion might be followed more easily, in the text below, except when we are quoting from the document, we will refer to "balance reserves" as proven reserves [given in English] and to reserves not on the balance as probable reserves [given in English], which corresponds to the definition of the terminology used for reserves in the document of the commission.

The figures on these values are given in Table 2, which is entitled "Total Coal Reserves in Yugoslavia."

"Accordingly, bituminous or better coal represents only 0.5 percent, brown coal 11.1 percent, and lignite 88.4 percent of total reserves, which indicates the adverse pattern of our coal reserves. At the same time, the high percentage of balance reserves (about two-thirds of total reserves) indicates that our coal has been explored to a high degree."

Table 2. Total Coal Reserves, 10^6 tons of coal

<u>Indicator</u>	<u>Bituminous or Better</u>	<u>Brown</u>	<u>Lignite</u>	<u>Total</u>	<u>%</u>
Reserves included in the balance	61	1,278	13,273	14,612	65.9
Reserves not included in the balance	17	335	1,378	1,730	7.8
Potential reserves	<u>37</u>	<u>1,845</u>	<u>4,939</u>	<u>5,821</u>	<u>26.3</u>
Total	115	2,458	19,590	22,163	100.0
Share	0.5	11.1	88.4	100	

The figures in the table pertain to total reserves, and the exploitable reserves are obtained if we multiply the reserves for bituminous or better coal by the exploitability coefficient of 0.6 (exclusively underground production), by the coefficient 0.69 for brown coal (mostly underground production), and by the coefficient of 0.85 for lignite (predominantly strip-mining).

If we take the figures from the table above and multiply them by the exploitability coefficients, we find that the exploitable and foreseeably exploitable reserves of coal in Yugoslavia are as follows (Table 3):

Table 3. Exploitable Coal Reserves, 10^6 tons of coal

<u>Indicator</u>	<u>Bituminous or Better</u>	<u>Brown</u>	<u>Lignite</u>	<u>Total</u>
Proven reserves	36.6	882.0	11,309.4	12,228.0
Probable reserves	10.2	231.1	1,171.3	1,412.6
Potential reserves	<u>23.7</u>	<u>1,018.4</u>	<u>3,358.5</u>	<u>4,400.6</u>
Total	70.5	2,131.5	15,839.2	18,041.2

It was assumed in this table that all the probable reserves would gradually become proven, which is very optimistic, and it was assumed that 80 percent of the potential reserves would gradually become proven reserves, which is also an optimistic assumption.

A mere fleeting glance at this table and reference to the quotation given below Table 5, "Lignite Production," makes it easy to see that the lignite production of $280 \cdot 10^6$ tons in the year 2020, given as the production required by the balance, is unrealistically high. That is, the immense capacity that would be used to achieve that level of production would not be utilized, nor would the personnel capability, since it would soon be necessary to curtail production considerably, which is not acceptable from either the economic or the technical standpoint, not to mention the shock that the sudden drop in coal production would mean for the country's economy. Nor dare we exhaust all our coal too early, since this is a fossil fuel which can also serve other purposes.

Confronting the problems above, the authors say in Section 7, which is entitled "The Problem of Depletion of Our Own Sources of Energy":

"According to the electric power balances up to the year 2000 which have been worked out, it would be necessary to commit about one-third of the coal reserves known today, while if the policy worked out as an illustration of possible development for the future period--up to the year 2020, were conducted, it would be necessary to commit 80 percent of the coal reserves known today. This means that after the year 2020 it would be necessary to considerably cut back coal consumption in order to provide a supply of coal to those consumers who cannot replace it with other forms of energy."

The section entitled "Measures and Actions To Safeguard the Supply of Energy" concludes with the following words:

"For all the reasons given, the measures and actions referred to in this section pertain above all to the period up to the year 2000, while the figures for the period between the year 2000 and 2020 should only sketch out the possibility for further development." These and a number of other vacillations over the coal-producing capability are belied by the concluding passage in Section 7, entitled "Problems of Depletion of Our Own Sources of Energy," which states:

"It is a valid fact, however, that over the next 40 years or so we will be furnishing more than three-fourths of the necessary energy from our own sources."

These and similar contradictory statements leave room open for discussion. The authors of this article feel, and this is in fact proven by the figures on exploitable, present and future reserves, that there ought not to be vacillation here, but rather that one can be rather unambiguous on the basis of present data on lignite reserves. This needs to be done very urgently, since a number of undertakings in the fuel and power industry are truly long-range in nature, and a timely assessment of lignite production as the basis of our fuel and power industry has repercussions for all the other estimates of the needs of other energy resources as well as on the measures which should be taken speedily. So, since the production planned up to the year 2000 is quite realistic and in line with the reserves, this should not influence the present program of operations. As for brown coal, the situation is far more favorable with respect to proven reserves, and also for the foreseeable exploitable, probable and potential reserves as to the level of production achieved. That is, at the rate of production planned only about 60 percent of proven reserves would be exhausted by the year 2020, and here our probable and potential reserves are considerably greater than the exploitable reserves so far known (see the foregoing table).

However, on p 167 of the document, in the section entitled "14. Reduction of Consumption of Furnace Oil in Industry" there is the following passage: "If, however, it proves not to be possible to increase brown coal production at the rate anticipated so as to replace furnace oil, provision should be made to import bituminous or better coal, especially for power installations near the

seacoast or near the navigable rivers. The replacement of petroleum with imported coal is justified, since coal costs half as much for the same amount of energy."

There is no doubt that the replacement of imported furnace oil with bituminous or better coal is an exceedingly good proposal, especially for users near the sea or navigable rivers, and a vigorous effort should be applied to this and perhaps the idea should even be broadened. But it really is not a good thing to express doubt about the possibility for production of domestic brown coal when the natural possibilities for this exist. On the contrary, we should especially emphasize the indispensable need for intensive exploration efforts to discover new reserves and to build new mines. Brown coal is our great opportunity to provide general consumption and industry the energy they need and to replace expensive furnace oil. This is not something we dare back off from at the very outset.

7045
CSO: 2800/134

YUGOSLAVIA

ZIROVSKI VRH URANIUM MINE DESCRIBED

Zagreb VJESNIK in Serbo-Croatian 9 Dec 84 p 3

[Article by Salih Zvizdic]

[Text] Here we are on Zirovski Vrh, a wooded mountain range which will be on all the world maps showing deposits of uranium ore. It is an exciting feeling to know that you are in a uranium mine. Not only because there are signs everywhere saying "nevarnost sevanja" (radiation danger), but also because this is our first uranium mine. Will there be more of them? It is possible, but uranium mines are not easy to come by.

Explorations began in Yugoslavia 24 years ago, and so far the geologists--on foot, from airplanes, with special devices--have covered more than 60,000 km² of our country. They also found some more at Kalna in eastern Serbia, and a mine was opened, but it was shut down because of the low grade of the ore. There were also certain signs of uranium ore in the hills of Macedonia, and then in the Kalnik--Bilo-Gora Mountains in Croatia. But out of all that Zirovski Vrh, in Slovenia, is the only bird in hand.

Engineer Dusan Pensa, director of the Zirovski Vrh Uranium Mine (RUZV) in the process of establishment, says that this mine can produce enough fuel every year for annual replacement of the Krsko Nuclear Power Plant. They are also counting on the mine's expansion and indeed even fuel for a future nuclear power plant at Prevlaka near Zagreb.

Yellow Cake in the Rock

In an ordinary mine visitors have to wear boots and put on cloaks when they are touring underground to protect them from mud and the "dew" from the mine walls. But it is different here. The news photographer and I had to strip to the skin and then put on a miner's clothing and footwear. The reason is that we might carry a portion of the radioactive radiation to others on our clothes. The miner's clothes and footwear we remove are decontaminated after washing.

This mine on the slopes of the Julian Alps is entered at four levels, the lowest at 430 and the highest at 530 meters. The levels are connected to one another by some 30 km of tunnels traveled by big dump trucks carrying some 20 tons of ore. The nearest settlement is Gorenja Vas, which is a few kilometers

away by a newly built road. Down below the mine a brook called the Brbovscica, which is more heard than seen, flows through the ravines and woods. They say that the vegetation flourishes and that plants mutate in the surrounding forest because of the radioactivity. They say that in that forest there are beech trees that look like oaks? Below the mine there are several fine cottages which the mine has built for the peasants to replace those demolished.

Uranium oxide or pitchblende (U_3O_8), and that is what is being sought, is found in an ore scattered in the bowels of the mountain in lenses with a diameter as much as 10 meters scattered through siliceous sandstone. Uranium is not dug like coal, which involves the minor going in search of the "black gold." No, here every lens first has to be located by the geologists in the deposit, then the miners dig broad tunnels to it.

Next year when it goes into regular operation, the RUZV will produce about 160,000 tons of ore a year; this involves digging another 160,000 tons of yellow stone, gangue. Of those 160,000 tons of uranium ore the mine will obtain in its own processing plant, built alongside the mine itself, 120,000 tons of uranium concentrate a year, which is popularly referred to as yellow cake, and this is actually uranium oxide (U_3O_8). After enrichment in the United States those 120 tons will yield 16.6 tons of fuel elements, which is sufficient for a 1-year replacement of spent fuel at Krsko.

A Darkness Thick as Lead

For 20 minutes already we have been walking through the mine tunnels escorted by the underground technical superintendent Engineer Andrej Pisak. These wide tunnels in pure rock are especially unusual because there are no supports. The ceilings of the tunnels have been consolidated with anchors driven into the stone.

The lamp in my helmet barely cuts through the darkness, which is as dense as lead, and the perpetual moisture flickers in front of the beam of its light. Every 10 minutes or so our eyes are flooded from a distance by the glittering eyes of the heavy dump trucks full of ore. An awkward meeting in a narrow tunnel with a vehicle as large as a railroad car. The bright eyes approach rapidly, and the roar shatters one's ears. We press against the wall, and the colossus passes. Water is flowing along the floor of the tunnel, and the watery mud looks like cafe au lait. The boots sink in almost to the knee, and what can only be called rain is dripping from the roof.

"Is this water also radioactive?" I asked Engineer Pisak.

"Yes, but below the hazard level."

Outside, before entering the mine, we measured the radiation on the tailings pile with a scintillation counter. Not, that is, useful ore, but the cast-off stone. Nevertheless, the indicator jumped like crazy. But, they say, "that is within the normal limits." The Geiger counter, which pops for every ionizing ray, sounds like a siren here.

Every miner wears on his chest a dosimeter to measure the daily amount of radiation received. The dosimeter is checked in Ljubljana, and if the film is near or below the upper limit of danger the miner is called in for examination. Incidentally, miners are granted 18 months of pensionable service for every year they work in the mine, and those outside the mine proper get 15 months.

Caution, Wash Your Hands!

At the work site, which we reached by making our way more than 2,000 meters through the wet bowels of Zirovski Vrh, we finally saw a group of miners. They were drilling with power drills that cut through the rock as though it were cheese. The drills leave a very hazardous radioactive dust, so that the miners wear special masks. Explosive charges are then placed in the drill-hole. After the demolition giant loaders with internal combustion engines arrive; their exhaust looks like a barrel of water in which the smoke is bathed before it comes out. So at least that smoke will not smother these people. I take a piece of ore in my hand: a heavy mineral with brown-green stripes through the basic stone, like gorgonzola cheese.

"How much do you earn?" I tried to shout over the noise of the drills handled by a team of miners headed by Vojko Cverle.

"Not bad, about 50,000 dinars with overtime and supplements!" Cverle said.

The others earn less. A helper at this underground work site earns about 35,000. Are there any sort of supplements? Yes, but those earnings are "with everything included." The mine employs 370 people, 180 of them underground. Most come from nearby places around Skofja Loka and Idrija. They are still short some 20 miners. At 300 meters below the surface the miners have a plant restaurant, a pleasant room in which breezes from the fans are swirling to break up the radioactive radon. The dust must absolutely not enter the body. That accounts for the warnings everywhere: "Caution, caution, wash your hands before you eat!"

Engineer Dusan Pensa, a young but experienced mining engineer, explained the process of operation to us at length. After it is mined, the ore is wet-ground in the plant, and then the pitchblende (yellow cake) is extracted from that uranium pulp with sulfuric acid. Incidentally, this is a very complicated job in which two zones are marked off because of the radiation hazard: zone A (very hazardous) and zone B (less hazardous). We even went there. That yellow cake is actually a yellow dust. One pound (0.454 kg) of that dust costs \$53! The man who is packing the yellow cake is set apart in a room where he has his own bath, washing machine, clothing, footwear and personal things. All of that stays there. This job is especially hazardous, and it is under strict monitoring because of the strong radiation. He earns about 65,000 dinars a month.

The Two (Hazardous) Zones

"I am aware of it all, so I am not afraid. Nevertheless, a man has to be careful," he says with a smile.

But that yellow dust is not yet fuel for nuclear power plants. Only after "enrichment" does one get some 16.6 tons of fuel elements from 120 tons of that powder. And in that 16.6 tons the most important is the quantity of the uranium isotope U₂₃₅. The more there is of that isotope, the stronger the fuel. A ton of ore contains only 840 grams of pitchblende. And from that it is possible to obtain about 90 grams of fuel elements!

All the yellow cake produced at Zirovski Vrh is worth about \$7 million, but about \$17 million have to be paid to enrich that quantity with the isotope U₂₃₅. Only the United States, the USSR and Great Britain possess the very sophisticated enrichment facilities. Our ore goes to the United States. Of those \$7 million the mine keeps about \$2 million to pay off credit and import equipment, while the remainder is used as currency to import the finished fuel for Krsko.

While we were walking through the tunnels, a strong wind was huffing past us, like a hurricane in some places. I know about mine ventilation, but this is a much stronger wind.

"The most important thing in a uranium mine is to remove the gas radon, since this is the most hazardous, and that is why we have this strong ventilation," Miran Planten, who directs the preparatory operations, explained to me.

Radium comes about through the radioactive decay of uranium, and the decay of radium produces the gas radon, which very quickly, in just its 4 minutes of life, decomposes into various components, the most essential of which is radioactive lead. The radon has to be expelled while it is a gas, and that is the secret of these hurricanes in the tunnels. Otherwise, if the radon gets into the lungs, radioactive lead, which is very hazardous, will soon be created there.

Every dump truck loaded with ore stops at the exit from the mine, at the place where the sign over the mine reads "Goodby and good luck." This is the so-called radiometric door over which a sensitive scintillation counter that looks like a large roller measures the strength of the ore's radiation. The grade of the ore depends on that strength.

Outside in the sunshine it is pleasant to look at the forest and the noisy Brbovscica. The effluent from the wet-ground ore cannot go into that brook because of its radioactivity, but is rather returned into a closed-cycle process. Nevertheless, the water of the Brbovscica is radioactive. Once again, "within normal limits." The Jozef Stefan Institute of Ljubljana takes care to protect that brook and indeed the entire environment from radioactivity. They say that they are succeeding.

7045

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YUGOSLAVIA

WESTERN REPORT ON AIR, WATER POLLUTION

West Berlin DER TAGESSPIEGEL in German 20 Oct 84 p 3

[Article by correspondent Gustav Chalupa: "Will Europe's Largest Canyon Disappear in a Reservoir? Environmental Protection Strongly Neglected in Yugoslavia"]

[Text] Belgrade, in October. For Yugoslavia, too, questions of environmental protection are becoming increasingly urgent. The stormy industrialization since the war is suddenly demanding its high price.

The Coordination Committee for Environmental Protection, created at the Federal Government in Belgrade, is supposed to look after the approximately 300 relevant regulations through the government departments, the environmental protection committees at the governments of the sectional republics, and the autonomous republics, and at the inspectorates in the communities. Several environmental protection projects were decided through so-called self-administration agreements, especially in the sphere of water protection, e.g., for keeping the Save and the Danube clean.

That the funds for environmental protection amount to merely 1 percent of the total investments is not very encouraging. "Up to now we tried to link up with the industrial development in the world, had to create jobs quickly, and therefore frequently overlook many things. Now no industrial plant any longer receives an operating license without appropriate environmental protection installations," the chairman of the Coordination Committee at the Belgrade Government explained. It will hardly be possible to avoid a broadly conceived campaign about ecological questions in order to awaken the population. In Bosnia the iron and steel city of Zenica is a typical example for industrialization without hesitation. Air pollution has reached 18 times the normal value. 1,300 kilograms of particles of cadmium, lead and zinc descend daily on the city with its 100,000 inhabitants. 88 billion cubic meters of flue gas and 75,000 tons of sulphur dioxide, which are produced by the iron combine, threaten the health of the workers and citizens. The waste gases of an excavation dump that has been smoldering for months exacerbate the situation, being driven into the narrow valley by winds. Gases escaping from the coking plant of the installation recently made a disaster alarm necessary. "People in Zenica should breathe through gills," the Croatian party paper VJESNIK wrote horrified. In three out of four children the breathing organs are defective.

In the winter months, epidemic-like waves of bronchial diseases are being registered. Diseases of connective membranes and mucous membranes are increasing. No particulars can be obtained about the number of workers in the combine suffering from asthma--only the fact that of the 17,000 employees in the plant at least 3,000 annually are sent to health resorts at the enterprise's expense. "All children of preschool age and schoolchildren go there twice a year for two weeks. We are undertaking all conceivable preventive measures," Dr. Imamovic, director of the municipal health service, asserts.

Included in the health controls are the inhabitants of the surrounding villages. 22 measuring stations were installed in the city area of Zenica; their values are regularly published in the local newspaper. "The sanitation program decided on by all political and economic organizations will improve the situation," Boza Kozel, the major, asserts in good German. "Filter and purification equipment is gradually being installed in the plant. All residential houses in the city will be connected to a district heating system fed from the plant. Already now the city has a great many areas, and green belts are being established around the city."

In Serbia some of the large rivers have already been poisoned--the Western Morava and the Ibar. Their waters are not grey or dirty; rather they roll as stinking red broth through the--still--fertile valleys of Eastern Serbia. 250 million cubic meters of sewage, in particular phenol, kill all life in the rivers. In the opinion of experts, neither the Volga nor the Nile could cope with the degree of contamination through self-purification. In the city of Kraljevo the urban water conduit and in the surrounding villages the wells can be used only by way of exception. In the summer months the population receives its drinking water from water trucks. At the same time, the polluters of the environment are known: The Obilic Coal Power Plant and a dozen of chemical plants. Nobody does anything, Belgrade appears to be powerless. The mass of technocrats and officials on the Gezirk and community level is impenetrable.

In Croatia a large-scale dying of fish occurred. For decades a state hog farm directed its poisonous sewage carelessly into the region of water meadows. The inventory of the farm: 80,000 farms. Croatian television aired a shocking film report on the terrible dying of tens of thousands of carp, pike, catfish, and other types of fish.

In Montenegro the deepest and longest canyon of Europe--the Tara--is threatened with danger. Like the Grand Canyon in America, it is a cultural monument. At the request of the Yugoslav government, the Tara was placed under the protection of UNESCO in 1980. Nevertheless, the [Tara] River is to be sacrificed to the rising energy demand. At first the state government of Montenegro intended to divert a part of the water of the Tara to the Adriatic Sea in order to produce electric power. Now the governments of the sectional republics of Montenegro and Bosnia-Herzegovina have agreed on a common project at the junction of the Tara and the Drina. 21 dam stages with hydroelectric power plants are to cement the waters of both rivers shut. The damming of the water would let the up to 160 meter deep Tara Canyon disappear in a 40 to 50 kilometer long lake. Resistance developed in Yugoslavia against that much "progress". Spontaneously

environmental committees came into being and "Save the Tara" Action Groups are bombarding the governments in Belgrade, Titograd and Sarajevo with petitions and memoranda. They demonstrated that these projects would cover only 0.5 percent of the energy need of Yugoslavia in 1990, and only a mere 0.2 percent in 2010. They found a surprising amount of understanding and journalistic support on the part of the Yugoslav media. The question of whether additional electric energy is worth the destruction of the uniquely beautiful Tara Canyon is becoming louder and louder in Yugoslavia.

8970

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YUGOSLAVIA

AGRICULTURAL POTENTIAL IN KOSOVO UNUSED

Belgrade BORBA in Serbo-Croatian 4 Dec 84 p 4

[Interview with Aleksandar Vasic, chairman of Kosovo's Provincial Committee for Agriculture and Forestry, by M. Antic: "Gold Reserves in the Furrow"]

[Text] Pristina--Can Kosova's agriculture provide enough food for this province, and free it from importing some basic agricultural products? And when?

One thing is clear at this time: although the potential possibilities are enormous, the chances have been lost for the agriculture of this province to provide the necessary amounts of food and fully employ all the processing capacities during the current medium-term period, although this was its primary task. The reason is well known: the planned tasks were not carried out, since productivity is low. The average yields range from 2.1 to 2.7 tons per hectare for wheat, 2.1 to 2.5 for corn, 22.3 for sugar beet, and 1.4 for sunflower seeds. Production is higher than planned only in wine growing and fruit growing.

Particularly low is productivity in livestock production, where the milk yield per cow is only 1.347 liters, while the growth in the number of cattle is also low.

We asked Aleksandar Vasic, the chairman of the Provincial Committee for Agriculture and Forestry, what he thought about all this.

[Vasic] There are many reasons why agriculture is lagging behind in our province. One of the main ones is that science and modern agricultural production have not yet been applied extensively to our fields. In recent years this has been changing, but with considerable difficulties and resistance. It is difficult to change the habits of private farmers in a short time, and in Kosovo they hold agriculture in their own hands. For instance, the social sector has only 12.3 percent of the cultivated land, and its share in livestock production is symbolic -- 2 percent. Even under such conditions, the social sector is making a significant contribution. It has a 15 percent share in total agricultural production, and provides about 55.6 percent of the market surpluses.

Investment activity in Kosovo has completely failed. It was planned that 17 billion dinars would be invested in the development of this branch, which was supposed to ensure a vigorous investment rate of 23.2 percent each year, and free the province from importing wheat and some other agricultural products. Something quite the opposite happened, however. To date, investments have grown at a rate of only 1.29 percent, and by the end of 1985 we are even expecting a 2.9 percent decrease.

The people responsible for the development of the agrocomplex in Kosovo see the causes of this situation in investments primarily in the unexpected delay in the realization of a special credit line from the World Bank, \$90 million, which was intended for the development of the agrocomplex. Furthermore, the Kosovo Bank is illiquid, and the pooling of the work and funds of agricultural organizations in Yugoslavia with enterprises in the province is proceeding very slowly.

We asked Aleksandar Vasic what other ills Kosovo's agriculture has to cure.

[Vasic] Many, but on this occasion I would single out the insufficient organization and ability of the entire agrocomplex to adjust to the new situation. I would add next that it is urgent -- to the extent that it can be done urgently at all -- for us to solve the problem of the shortage of creative professional personnel, particularly technicians, foresters, and veterinarians. There are currently 54 veterinarians working in the province, all facing retirement, and at this time we need at least 150. We are giving scholarships to 40, but that is too few. We must also urgently solve the shortage of permanent working capital, which is simply hindering production. At the same time, we have to fight for consistent implementation of the programs agreed upon for the sowing structure.

The great chance for Kosovo's agriculture is the two new hydrosystems for irrigation -- Ibar and Radonjic. When they go into operation, a total of 80,000 hectares of the most fertile land will be irrigated. This is not being done now, although the hydrosystems have been completed, just because the redistribution and division of the land into parcels were not done in time. No one has calculated precisely how much has been lost because about 30,000 hectares are not being irrigated with water from these hydrosystems. Agricultural experts say that just the increased yields from the land that was supposed to be irrigated this year would have freed the province from importing wheat. In any case, it is expected that next year the thirsty Kosovo and Metohija fields will finally receive the water. The following example will show how precious this water will be. Preliminary estimates indicate that the losses in the province from this year's drought amount to 14.5 billion dinars. If the land had been prepared for irrigation, the Ibar hydrosystem would have paid for itself in this year alone.

The last question addressed to Aleksandar Vasic was: Where is the future of Kosovo's agriculture?

[Vasic] We are doing and undertaking everything possible, by making maximum use of the land, increasing productivity, making significant new investments, irrigation, opening up new land, changing the cattle stock, bringing science to our fields, using our exceptional natural conditions, and particularly by accelerating association, to produce, as early as 1990, 360,000 tons of wheat, 408,500 tons of corn, 260,000 tons of sugar beet, 52,000 tons of barley, 40,000 tons of sugar, 70 tons of oil seeds... That will be enough to provide the population of the province with all the vital food products and to export some of them. This has been and has remained our main goal.

[Insert: "Possibilities"]

Kosovo has 300 hectares of plowed land, 11,174 hectares of orchards, 79,000 hectares of meadows, and 182,000 hectares of pastures. The province has 392,355 head of cattle (of which only 10 percent are purebred), 374,271 sheep, and 70,000 pigs. There are 17,000 tractors now operating in Kosovo's fields, with more than 42,000 different attachments and 1,200 combines.

The province also has processing capacities: a milling and baking industry with a capacity of 145,000 tons of flour and 50,000 tons of bread, a sugar factory that can process 150,000 tons of beets, a beer factory with a capacity of 300,000 hectoliters, a factory for processing 14,100 tons of fruit and vegetables, a factory for producing 14,000 tons of edible oil, dairies producing 130,000 liters of milk per day, wine cellars that can accommodate 9,500 carloads of wine, a slaughterhouse industry with a capacity of 32,000 tons of meat, and so on.

9909
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YUGOSLAVIA

LAW ON PROTECTION FROM RADIATION, NUCLEAR SAFETY MEASURES

Belgrade SLUZBENI LIST SFRJ in Serbo-Croatian No 62, 23 Nov 84 pp 1371-1380

[Law passed by the SFRY Assembly in a session of the Federal Chamber in Belgrade 21 November 1984 and signed by Veselin Djuranovic, chairman of the SFRY State Presidency, and Dusan Alimpic, president of the SFRY Assembly: "Law on Protection From Ionizing Radiations and on Special Safety Measures in the Use of Nuclear Energy"]

[Text] I. Introductory Provisions

Article 1

The measures prescribed by this law and regulations enacted on the basis of this law shall be taken in order to protect human life and health and to protect the environment from the harmful effect of ionizing radiations of interest to the entire country and the international community and in order to create conditions for the safety of nuclear facilities.

Article 2

For the purpose of this law "protection of the environment from the harmful effect of ionizing radiations" means protection of the air, water, soil, food and livestock feed, medical drugs and articles for personal hygiene and protection of the environment in which people work or come into contact with sources of ionizing radiations or in which those sources are used.

Article 3

For the purpose of this law "sources of ionizing radiations" means:

- 1) radioactive substances which reach the environment because of nuclear explosions or other causes of foreign origin;
- 2) nuclear reactors and other devices in nuclear facilities which contain radioactive substances;
- 3) irradiated nuclear fuel;

- 4) X-ray machines, accelerators and other devices and machines which produce or may cause ionizing radiations;
- 5) radioactive substances and devices containing radioactive substances;
- 6) uranium and thorium mines, other mines in which ionizing radiations exceeds the prescribed limits, plants for processing uranium and thorium ore and plants for obtaining nuclear raw materials from other ores and raw materials which contain radioactive substances;
- 7) radioactive waste.

Article 4

For the purpose of this law "nuclear facilities" means: nuclear power plants, nuclear heating plants, a research nuclear reactor, the machinery for enrichment of uranium, the machinery for manufacturing fuel elements, machinery for processing and disposal of irradiated nuclear fuel, and facilities with machinery and equipment intended for the storage, processing and disposal of radioactive waste.

Article 5

For the purpose of this law "safety of a nuclear facility" means all the technical and organizational measures envisaged by the design, performed during construction, verified in pilot operation, and applied during use and indeed even after termination of operation, which under all conditions guaranteed protection of the environment from contamination with radioactive substances and prevent irradiation of the population and persons who work in those facilities in excess of the prescribed limits.

Article 6

For the purpose of this law "exceptional events" means conditions in the environment whose consequence is or which could cause irradiation or radioactive contamination of the workplace, the population, parts of the population, or property, in excess of the limits prescribed on the basis of this law.

For the purpose of this law "nuclear accident" means an event or several events occurring in the operation of a nuclear facility which has caused any of the consequences enumerated in Paragraph 1 of this article.

II. General Measures for Protection From Ionizing Radiations

Article 7

The following measures shall be taken in implementing protection from ionizing radiations:

- 1) detection of the presence, kind and strength of ionizing radiations and of the type and level of contamination in the environment;

- 2) determination of the conditions for siting, construction and use of nuclear facilities;
- 3) statement of the conditions for the sale and transport of sources of ionizing radiations and for use of those sources;
- 4) furnishing the equipment and devices for protection from ionizing radiations and for monitoring the effectiveness of that protection;
- 5) restriction of the production, sale or use of products or raw materials contaminated with radioactive substances;
- 6) the keeping of records on sources of ionizing radiations as well as on the population's exposure to those radiations;
- 7) checking the state of health of personnel working with sources of ionizing radiations and monitoring their exposure to those radiations;
- 8) education and specialized training of personnel in the field of protection from ionizing radiations and the safe use of nuclear facilities;
- 9) personal and mutual protection of people from ionizing radiations;
- 10) activation and use of civil defense personnel and equipment;
- 11) sheltering the population, evacuating the population and property from threatened areas, the use of radio-preventive agents, decontamination of people and domestic animals, the soil, water, food and livestock feed, as well as other products and articles contaminated with radioactive substances;
- 12) safekeeping, treatment and final disposal of radioactive waste;
- 13) physical protection of nuclear facilities and nuclear materials;
- 14) other measures for protection from ionizing radiations envisaged by federal regulations or by international treaties which have been ratified.

Article 8

Contamination of the air, soil, rivers, lakes and the sea, solid and liquid precipitation, drinking water and food and livestock feed shall be systematically tested so that ionizing radiations are detected and the danger from them established in good time.

The testing referred to in Paragraph 1 of this article shall be done at the locations, by the methods and at the intervals specified by a regulation of the competent federal agency.

The testing referred to in Paragraph 1 of this article may be done by organizations of associated labor:

- 1) which have personnel with the appropriate specialized training and experience to conduct the pertinent tests;
- 2) which possess the appropriate devices and equipment for performing the individual tests.

The federal administrative agency competent for health affairs shall set forth in a decision which organizations of associated labor meet the conditions for performing the tests referred to in Paragraph 1 of this article. The decision shall be published in SLUZBENI LIST SFRJ.

Article 9

An organization of associated labor which is using a nuclear facility (hereinafter "user of a nuclear facility") must systematically study contamination with radioactive substances of the environment in its vicinity.

The testing referred to in Paragraph 1 of this article shall be done in the manner and scope and at the intervals set forth in the regulation of the competent federal administrative agency.

The user of a nuclear facility shall establish a program of tests pursuant to Paragraph 1 of this article on the basis of the regulation referred to in Paragraph 2 of this article and a safety report; the program shall be subject to confirmation by the competent agency in the republic or autonomous province.

Article 10

A nuclear facility may be built and used only at a site and under the technical and other conditions which ensure protection of human life and health and protection of the environment from ionizing radiations over and above the prescribed limits.

In Paragraph 1 of this article "over and above the prescribed limits of irradiation" means the limits set so that irradiation from a nuclear facility, together with the irradiation coming from other sources of ionizing radiations, and to which the population is exposed in that area, does not exceed the limits prescribed on the basis of this law.

Article 11

Radioactive waste may be collected, recorded, treated, stored, finally disposed of and released into the environment only in the manner and under the conditions defined by regulations enacted on the basis of this law.

Article 12

If the user of a nuclear facility intends to cease to use the facility permanently, he must give advance notice to the competent agency in the republic or autonomous province.

Article 13

The user of a nuclear facility who permanently ceases to use the facility must take the appropriate restorative measures at the site, in the facility and in their vicinity within the period of time set by the competent agency in the republic or autonomous province and in such manner, pursuant to this law, as to guarantee protection of the environment from ionizing radiations.

Article 14

Organizations of associated labor, other self-managing organizations and communities, and self-employed persons may acquire, sell and use radioactive substances over and above the prescribed limits of activity and use X-ray machines and other devices which produce ionizing radiations only if they have obtained in advance the approval of the agency designated by the statute of the republic or province.

Article 15

The approval referred to in Article 14 of this law may be issued under the following conditions:

- 1) if the facilities and rooms in which the sources of ionizing radiations are produced, stored or worked with meet the technical, safety, health and other conditions so as to guarantee protection of the environment from ionizing radiations and protection from contamination with radioactive substances;
- 2) if the persons working with sources of ionizing radiations have the appropriate means necessary for protection from ionizing radiations and the necessary equipment for measuring radiation;
- 3) if the persons working with sources of ionizing radiations have the appropriate specialized training and meet the prescribed health conditions for performance of their jobs;
- 4) if a plan of measures exists for preventing accidents and for eliminating the consequences of accidents;
- 5) if measures have been taken to prevent radioactive waste from bringing about contamination of the environment over and above the prescribed limits.

Article 16

The following may not work with sources of ionizing radiations:

- 1) persons under age 18;
- 2) women during pregnancy, and in the case of open sources of ionizing radiations--women who are nursing infants as well.

Article 17

Only persons who have the appropriate specialized training and meet the health conditions prescribed on the basis of this law may work with sources of ionizing radiations.

The persons referred to in Paragraph 1 of this article shall be placed under medical surveillance and shall be subject to medical examinations before beginning work with the sources of ionizing radiations and during work, and if necessary--after termination of work with sources of ionizing radiations.

Article 18

Persons working with sources of ionizing radiations and the remaining population may not be exposed to irradiation over and above the limits set by a regulation issued on the basis of this law.

The level of exposure to ionizing radiations of persons working with sources of radiation and the remaining population shall be measured by organizations of associated labor designated by the republic or provincial statute and equipped and competent to perform work of that type.

Article 19

Radioactive lightning rods may not be installed on residential buildings, school buildings, or other public buildings intended for the gathering or residence of children and young people (movie houses, theaters, youth centers, gymnasiums, reading rooms, boarding schools, vacation facilities, children's hospitals, maternity hospitals, etc.).

Article 20

It is prohibited to take systematic X-rays of persons under age 16.

Sources of ionizing radiations may be used in medicine if a physician of the relevant specialty prescribes or approves the diagnostic or therapeutic procedure and if the medical justifiability of the scope of their use is evaluated under the conditions prescribed on the basis of this law.

Article 21

Organizations of associated labor, other self-managing organizations and communities, bodies and agencies of sociopolitical communities and self-employed persons are required to furnish personal dosimetric and protective devices to personnel employed at jobs where they are exposed to ionizing radiations, to see that the proper condition of those devices is checked, and to see that their workers use them correctly during work, and also to take measures to protect those workers and, if necessary, to send individuals for examination and medical treatment.

The organizations, communities, bodies and agencies, and working people referred to in Paragraph 1 of this article are required to provide for the prescribed measurements of contamination or of the level of exposure of workers to ionizing radiations, to check the contamination of substances, interiors and the air in interiors where work is done with sources of ionizing radiations, and to occasionally check the proper condition of measuring instruments and safety devices.

Article 22

Drinking water, food and articles for personal hygiene which contain radioactive substances over and above the prescribed limits of activity may be used, sold and put to the intended purpose under the conditions prescribed on the basis of this law.

Article 23

Organizations of associated labor using nuclear facilities and uranium and thorium mines must have their own department for protection from ionizing radiations.

Organizations of associated labor using other sources of ionizing radiations must have specialized personnel responsible for administering protection from ionizing radiations.

Article 24

Organizations of associated labor, other self-managing organizations and communities, and self-employed persons, when in working with sources of ionizing radiations they cause contamination of the environment over and above the prescribed limit, are required to administer decontamination through their own department or through organizations designated by the republic or provincial statute.

Article 25

Protection of human life and health from ionizing radiations is mandatory in exceptional events and is carried out by the measures envisaged to eliminate the danger caused by those events, by performing personal and collective protection, and by activating and using civil defense personnel and equipment.

When exceptional events occur, the population and property are evacuated from areas threatened with ionizing radiations if protection of the population or property cannot be guaranteed by other measures defined on the basis of this law.

The evacuation referred to in Paragraph 2 of this article shall be conducted pursuant to an order of the competent agency in the republic or autonomous province.

Article 26

An organization of associated labor, other self-managing organization, community or body or agency of a sociopolitical community which establishes that irradiation exists in a particular area over and above the limits prescribed on the basis of this law or that there exists contamination with radioactive substances, must immediately report that danger to the competent agency designated by the republic or provincial statute and the federal administrative agency competent for health affairs.

Should it ascertain that a danger exists of radioactive contamination of the territory of neighboring states, the federal administrative agency competent for health affairs shall report that danger to the competent authorities of those states.

Users of nuclear facilities must meet the appropriate technical and other conditions so as to afford direct and rapid transmission and reception of the reports referred to in Paragraph 1 of this article and other reports and data on the safety of nuclear facilities.

Article 27

Organizations of associated labor, other self-managing organizations, communities and the bodies and agencies of sociopolitical communities engaged in the production, sale or import of sources of ionizing radiations or using such sources shall keep records on those sources and shall be required to report every such delivery to the competent agency designated by the republic or provincial statute.

The organizations of associated labor which are designated to measure the level of exposure to ionizing radiations (Article 18, Paragraph 2) shall be required to keep records on the irradiation of the population and personnel who during work have been exposed to the effect of ionizing radiations, and submit the data on irradiation to the agencies or organizations designated by the republic or provincial statute.

III. Special Safety Measures for Nuclear Facilities and Nuclear Materials

1. Siting, Construction and Use of Nuclear Facilities

Article 28

A nuclear facility may be built only at a site for which the competent agency in the republic or autonomous province has enacted a land-use plan and urban plan or a decision replacing such a plan.

Article 29

The technical and other conditions for siting and construction of a nuclear facility shall be evaluated on the basis of an analysis of all the data important to assessment of the possible influences of the planned nuclear facility

on the environment and of the possible influences of events in the environment on that facility, as well as of the evidence that conditions have been met with respect to the requirements of a country's security and nationwide defense.

Article 30

The analysis referred to in Article 29 of this law, which shall be a specific document of the investor, shall in particular state the hazardous natural and man-made phenomena which exist or which could occur in the area of the intended site (earthquake, flood, earth slide, explosion, fire, etc.), the critical pathways for irradiation of the population with radioactive substances, the danger of the consequences of these phenomena, and the guarantees necessary in the design for preventing those hazards and consequences.

Article 31

An application for issuance of a permit for a site shall be accompanied by the evidence and analysis referred to in Article 29 of this law and by the other documentation prescribed from which it is possible to establish that the prescribed safety of the nuclear facility at the site in question has been guaranteed.

Article 32

The following shall be appended to an application for issuance of a permit for construction of a nuclear facility: the site permit, the technical documentation for construction, the report on safety, including evaluations by specialists, and other prescribed documentation from which it is possible to ascertain that the prescribed safety has been guaranteed.

The safety report shall contain the following: information on the nuclear facility and on its influence on the environment, a description of the project, an analysis of possible accidents and the measures required to eliminate or reduce the danger for the population and personnel of the nuclear facility, the solution for the safe disposal of radioactive waste, as well as other prescribed data.

The safety report must be supplemented pursuant to the changes that occur in the design during construction, pilot operation, startup, use, and also when operation of the nuclear facility ceases permanently.

Article 33

After construction a nuclear facility may not be started up until pilot operation establishes that the measures envisaged by law and regulations enacted on the basis of law have been met.

The investor of the nuclear facility is required to append the following documentation to the application for issuance of a permit for pilot operation:

- 1) the safety report, with data on changes and additions that have occurred during construction of the nuclear facility;
- 2) the results of successfully conducted preoperation tests;
- 3) proof of the quality of the equipment installed and the materials built into the project;
- 4) the results of meteorological measurements conducted at the site and results of measurements of radiation in the vicinity of the nuclear facility which originate from natural and man-made sources;
- 5) the program for pilot operation;
- 6) data on the specialized training, competence, work experience and health conditions of plant personnel controlling the production process in the nuclear facility and possessing a work permit issued pursuant to the provisions of this law;
- 7) data on organization of the department and resources for protection from ionizing radiations;
- 8) the plan and measures for protection from possible nuclear accidents and procedures in case of an accident;
- 9) the operating conditions and restrictions during pilot operation;
- 10) data on the physical protection of the nuclear facility and nuclear materials which have been furnished.

Article 34

The permit for pilot operation of the nuclear facility shall be issued if on the basis of a check on the quality of the work done, the preoperation tests and the documentation referred to in Article 33 of this law it is found that the conditions prescribed with respect to the safety of the nuclear facility have been met.

Article 35

A permit for startup of a nuclear facility (operating permit) may be issued if the user of the nuclear facility appends documentation from which it can be ascertained that the conditions prescribed have been met and if the pilot operation and technical acceptance ascertain that the nuclear facility meets the prescribed conditions with respect to safety.

The agency competent to issue the permit for startup of a nuclear facility shall set forth the operating conditions and restrictions on the operation of the nuclear facility.

Article 36

A nuclear facility shall be designed, built, used and maintained in conformity with Yugoslav standards, technical specifications and quality standards of products and services so as to guarantee its prescribed safety. The material and equipment for construction and maintenance of a nuclear facility must in their quality meet the prescribed Yugoslav standards, technical specifications or quality standards, and the quality of services in the construction and maintenance of those facilities must meet the prescribed standards.

Article 37

The rules of international or foreign technical specifications and international and foreign standards may be applied in construction and use of a nuclear facility, under the following conditions:

- 1) if this has been envisaged on the basis or within the framework of an international agreement ratified by the Socialist Federal Republic of Yugoslavia;
- 2) if those rules or standards, adopted in relationships of business and technical cooperation or long-term industrial cooperation with foreign countries or investment of the capital of foreign persons in domestic organizations do not contradict the regulations concerning Yugoslav standards, technical specifications or quality standards of products and services;
- 3) if for a particular product, production process, service or operations regulations have not been enacted concerning Yugoslav standards, technical specifications or quality standards.

In the cases referred to in Subparagraphs 2 and 3 of this article the rules of international or foreign technical regulations or international and foreign standards may be applied under an order of the Federal Executive Council adopted in response to a proposal of the federal agency competent for nuclear energy and the federal organization competent for standards.

Article 38

The approval for the siting, construction, commencement of pilot operation and startup of a nuclear facility shall be issued by the competent agency in the republic or autonomous province, in conformity with law.

Article 39

The agency referred to in Article 38 of this law may issue a permit for siting, construction, pilot operation and startup of a nuclear facility if the competent commission for safety of nuclear facilities judges that it has met the specified conditions.

The commission referred to in Paragraph 1 of this article shall be established in the federal administrative agency competent for nuclear energy.

The commission referred to in Paragraph 1 of this article shall at the request of the agency referred to in Article 38 of this law make an evaluation as to whether the prescribed surveys were made of the terrain, whether the appropriate standards and specifications were applied, and whether prescribed conditions were met as to the quality of the work done and the meeting of other prescribed or specified conditions which are important to protecting the environment and to the safety of the nuclear facility.

The commission referred to in Paragraph 1 of this article shall evaluate whether the conditions in Paragraph 3 of this article have been met on the basis of research done by appropriate specialized and scientific organizations and the safety report of the nuclear facility and other data and documentation prepared and submitted by the investor of the nuclear facility.

Article 40

The members of the commission for safety of nuclear facilities shall be appointed by the federal administrative agency for nuclear energy from among distinguished specialists in the field of nuclear energy and protection from ionizing radiations, in response to nominations of the competent republic and provincial agency and representatives of certain federal administrative agencies and federal organizations.

Article 41

Only workers who under the conditions stated in Article 17 of this law have the particular professional competence and physical, mental and other abilities and skills for work on the particular jobs or tasks may work on jobs and tasks of controlling the production process in a nuclear facility and on jobs and tasks of supervising that process.

The federal administrative agency competent for nuclear energy shall state the jobs and tasks for whose performance it is necessary to meet the conditions stated in Paragraph 1 of this article.

Article 42

A commission specified for the purpose shall evaluate satisfaction of the conditions stated in Article 41, Paragraph 1, of this law and shall test the knowledge of the workers for performance of the particular jobs and tasks, and the competent agency in the republic or autonomous province shall issue the certificate on satisfaction of the conditions.

Article 43

A nuclear facility must operate in accordance with the operating and other technical instructions pertaining to all modes of operation, to the handling of nuclear materials and transport of such materials, to maintenance of systems and surveillance over systems, to internal monitoring and to procedures in case of a nuclear accident.

An organization of associated labor which is using a nuclear facility is required, pursuant to the provisions of this law, to adopt and apply instructions and other official enactments pertaining to the operation of the nuclear facility, and specifically to the following:

- 1) to operation and procedures in connection with startup, with regular operation and with cessation of the operation of the nuclear facility or parts of it;
- 2) to operation and procedures related to maintenance, repairs, inspections and technical checks of equipment;
- 3) to operation and procedures in handling radioactive waste;
- 4) to procedures for monitoring radioactivity in the nuclear facility and its vicinity;
- 5) to the organization, operation and measures for protection from radiation in the nuclear facility and the first-aid service;
- 6) to a program for guaranteeing the quality of operations and equipment for the safe operation of the nuclear facility;
- 7) to the plan and program of measures in case of a nuclear accident and other exceptional events in the nuclear facility (breakdown of equipment, and so on);
- 8) to a program of measures and procedures in case of permanent cessation of the operation of the nuclear facility.

Article 44

An organization of associated labor which is using a nuclear facility must file reports with the competent agencies in the republic or autonomous province:

- 1) concerning every intended and accomplished change of procedure contained in Article 43, Paragraph 2, Subparagraph 1, of this law, equipment or method of operation for which conditions or operating restrictions have been specified;
- 2) concerning breakdowns of equipment and accidents at the nuclear facility and the measures taken to eliminate the consequences of the accident;
- 3) concerning errors of personnel in handling the nuclear facility;
- 4) concerning cases of exceeding the prescribed limits on the quantities and activity of discharge or emission of radioactive waste or concerning departure from the prescribed conditions under which they may be emitted or discharged;
- 5) concerning other circumstances important to the safety of the nuclear facility.

The organization referred to in Paragraph 1 of this article is required to file regular reports with the competent authorities on the operation of the nuclear facility, at the intervals and in the manner which those authorities specify.

Article 45

Users of nuclear facilities and other sources of ionizing radiations and the competent authorities of the sociopolitical communities shall furnish the conditions for final disposal (containment) of radioactive waste created by those facilities and sources.

Users of nuclear facilities and the competent authorities of sociopolitical communities, in collaboration with other interested organizations and communities, must conduct proceedings for concluding self-management accords or social compacts setting forth the joint foundations for final disposal (containment) of radioactive waste created through the use of nuclear energy.

2. Sale of Nuclear Materials

Article 46

Uranium, thorium consisting of natural isotopes, uranium with a diminished share of the isotope U²³⁵, plutonium²³⁹ and its heavier isotopes, uranium²³³, uranium enriched with the isotope U²³⁵ and other nuclear raw materials and nuclear materials as designated by the federal administrative agency competent for nuclear energy (hereinafter "nuclear materials") may be sold under the conditions prescribed by this law and regulations enacted on the basis of this law.

Article 47

Organizations of associated labor which satisfy the conditions prescribed by law and obtain a specific permit from the competent agency in the republic or autonomous province may engage in the sale of nuclear materials.

The sale of nuclear materials across the border of the Socialist Federal Republic of Yugoslavia also requires a permit issued by the federal administrative agency competent for nuclear energy, in agreement with the federal administrative agency competent for national defense, the federal administrative agency competent for foreign affairs, and the federal administrative agency competent for internal affairs.

Article 48

An organization of associated labor engaged in the sale of nuclear materials is required to organize and constantly monitor satisfaction of the prescribed conditions and performance of the measures envisaged for the sale of those materials.

The organization of associated labor referred to in Paragraph 1 of this article is required to adopt an enactment on conduct of measures for supervision in the sale of nuclear materials.

Article 49

Nuclear materials in the distribution sector may be handled only by adults who are professionally qualified to handle those materials.

Persons who are not professionally qualified to handle nuclear materials may only transfer, load, unload and store those materials under the supervision of persons who do have the professional qualifications, and that if they have previously been informed about the procedure for such work, the dangers and the protective measures.

Article 50

An organization of associated labor engaged in the sale of nuclear materials is required to provide special warehouses and containers to ensure protection of the environment.

Storage facilities for nuclear materials and their containers shall be manufactured and maintained in conformity with regulations on Yugoslav standards, technical specifications and quality standards of products and services.

The storage facilities in which nuclear materials are stored must be guarded so that unauthorized persons do not have access to them.

Article 51

Nuclear materials may be sold or relinquished only to organizations of associated labor and other social juridical persons who have a permit for their purchase.

The permit for the purchase of nuclear materials is issued by the competent agency in the republic or autonomous province.

The permit for the purchase of nuclear materials shall not be issued to a user of a nuclear facility who does not meet the conditions for storage, safekeeping and physical protection of those materials or who does not have specialized personnel for handling those materials.

Nor shall a permit for the purchase of nuclear materials be issued if the interests of national security and nationwide defense require refusal.

Article 52

Nuclear materials shall be transported in conformity with federal regulations governing the transport of hazardous substances and international treaties which have been ratified concerning the transport of hazardous substances.

3. Recordkeeping and Monitoring of Nuclear Materials

Article 53

An organization of associated labor which within its own activity produces, processes, uses or stores nuclear materials is required to keep records on those materials for all the zones used in the physical balances and to file the data from those records with the competent republic or provincial agency.

Article 54

The competent republic or provincial agencies shall keep records on nuclear materials for all zones used in the physical balances in the republic or autonomous province and shall check the records kept by organizations of associated labor referred to in Article 53 of this law.

The agencies referred to in Paragraph 1 of this article shall file data on nuclear materials from the records which they keep with the federal administrative agency competent for nuclear energy.

The federal administrative agency competent for nuclear energy shall define the zones of physical balances for the entire territory of the Socialist Federal Republic of Yugoslavia.

Article 55

For the purpose of surveillance of nuclear materials by inspection the organization of associated labor referred to in Article 53 of this law must provide the following:

- 1) a place and utility connections for placement and unhindered functioning of the equipment prescribed for monitoring nuclear materials;
- 2) the placement of seals on machinery or rooms in which nuclear materials are located.

If the equipment necessary for monitoring nuclear materials is set up or if machinery or a particular part of a space is sealed, the organization of associated labor referred to in Paragraph 1 of this article must guarantee the conditions for unhindered functioning of the equipment or to prevent damage to the seal.

Article 56

The federal administrative agency competent for nuclear energy shall keep records on nuclear materials and shall perform other tasks related to the keeping of those records in order to fulfill the international obligations of the Socialist Federal Republic of Yugoslavia in the field of nuclear energy.

4. Physical Protection of Nuclear Facilities, Nuclear Materials and Radioactive Waste

Article 57

An organization of associated labor which is using a nuclear facility or nuclear materials is required to organize or provide for physical protection of the nuclear facility, nuclear materials and radioactive waste.

The organization of associated labor referred to in Paragraph 1 of this article shall set forth in a general self-management act the measures for physical protection of nuclear facilities, nuclear materials and radioactive waste during their use, transport, processing or storage.

The document referred to in Paragraph 2 of this article shall be subject to consent of the competent agency in the republic or autonomous province.

Article 58

A nuclear facility's investor must envisage and perform all the measures of physical protection on the site for construction of the nuclear project, at the nuclear facility, at a construction project which serves a nuclear facility or is part of it, and other measures for protection of nuclear materials and radioactive waste in order to protect against damage, fire, theft, and other harmful actions or events, and in order to protect the documentation pertaining to the construction of the nuclear facility.

Article 59

If the competent agency in the republic or autonomous province which oversees performance of the measures of physical protection deems it to be necessary, it may itself temporarily define and undertake certain measures of physical protection of a nuclear project or facility, nuclear materials and radioactive waste.

IV. Oversight and Authority

Article 60

The competent agencies in the republic or autonomous province shall oversee the enforcement of this law and regulations enacted on the basis of this law.

As an exception to the provision of Paragraph 1 of this article, the federal administrative agency competent for health affairs and the federal administrative agency competent for internal affairs shall oversee the sale of sources of ionizing radiations across the border of the Socialist Federal Republic of Yugoslavia.

Article 61

The competent military authorities shall oversee the enforcement of measures for protection from sources of ionizing radiations produced or distributed and the safety of nuclear facilities used in the Yugoslav People's Army, in conformity with this law.

The administrative agencies competent for internal affairs shall oversee the enforcement of measures for protection from sources of ionizing radiations produced and distributed and the safety of nuclear facilities used in agencies for internal affairs, in conformity with this law.

Article 62

In the exercise of oversight the authorities and agencies referred to in Articles 60 and 61 of this law, each within its respective jurisdiction, may act as follows:

- 1) order correction of shortcomings related to operation at sources of ionizing radiations and to the physical protection of nuclear facilities and nuclear materials;
- 2) halt the work with sources of ionizing radiations and revoke the permit for use of sources of radiation;
- 3) halt construction of nuclear facilities for whose siting, construction or reconstruction, startup or use there is no permit, until a permit is obtained or until other conditions prescribed or specified are met;
- 4) prohibit sources of ionizing radiations from being sold or carried over the border of the Socialist Federal Republic of Yugoslavia or carried from one place to another within the Socialist Federal Republic of Yugoslavia until the conditions prescribed or specified are met;
- 5) file petition for institution of misdemeanor proceedings or file a charge for an economic violation or crime if in the conduct of oversight they find that accountability under the provisions of this law and other statutes is prescribed for failure to abide by regulations.

In the case referred to in Subparagraph 2 of Paragraph 1 of this article the agency or authority which issued the order to halt work with sources of ionizing radiations and to take away the permit for use of sources of radiations must specify in its decision the manner in which those sources are to be dealt with and disposed of in the future.

An appeal against a decision to take the measures referred to in Paragraph 1 of this article shall not stay execution of the decision.

Article 63

In discharging the responsibility of federal agencies for carrying out the provisions of this law and regulations enacted on the basis of this law which pertain to performance of international treaties which have been ratified, to the recordkeeping and monitoring of nuclear materials, and to Yugoslav standards, technical specifications and quality standards of products and services, which are of interest to the entire country, when supervision over enforcement of those regulations is exercised directly by the competent agency in the republic or autonomous province, federal agencies have the right and duty:

- 1) to issue mandatory instructions to the competent agency in the republic or autonomous province;
- 2) if the administrative agency in the republic or autonomous province does not perform a particular administrative task on the basis of the authorization contained in this law, and nonperformance of that administrative task could have harmful consequences, to perform that task and so inform the Federal Executive Council.

Article 64

The competent republic or provincial authorities are required to file with the competent federal administrative agencies data and reports on the enforcement of this law and regulations enacted on the basis of this law within the periods of time appointed by those federal agencies.

Article 65

The federal administrative agency competent for health affairs shall issue regulations concerning the following:

- 1) the places, methods and intervals for testing the contamination of air, soil, rivers, lakes and the sea, solid and liquid precipitation, drinking water, food and livestock feed with radioactive substances (Article 8);
- 2) the manner, scope and intervals for systematic testing of contamination with radioactive substances in the vicinity of nuclear facilities;
- 3) the manner of collection, recordkeeping, processing, safekeeping, final disposal (containment) and discharge or emission of radioactive waste into the environment (Article 11);
- 4) the distribution and use of radioactive substances over and above a particular limit of activity, X-ray machines and other devices which produce ionizing radiations and the measures for protection from the radiation of those sources (Articles 14 and 15);
- 5) the specialized training, conditions of health and medical examinations of persons who may work with sources of ionizing radiations (Article 17);

- 6) the limits above which the population and persons working with sources of ionizing radiations must not be exposed to radiation and the measurements of the level of exposure to ionizing radiations of personnel working with sources of those radiations and checking the contamination of the workplace (Article 18);
- 7) the conditions for use of sources of ionizing radiations in medicine (Article 20);
- 8) the conditions under which drinking water, food and articles for personal hygiene containing radioactive substances over and above the specified limits of activity may be distributed and used (Article 22);
- 9) the maximum limit set for radioactive contamination of the environment and the conduct of decontamination (Article 24);
- 10) the manner of keeping records on sources of ionizing radiations and on irradiation of the population and of persons who have been exposed in their work to the effect of ionizing radiations (Article 27).

The federal administrative agency competent for health affairs, in agreement with the federal administrative agency competent for internal affairs and the federal administrative agency competent for national defense, shall issue the regulations referred to in Subparagraphs 1, 4 and 9 of Paragraph 1 of this article.

Article 66

The federal administrative agency competent for nuclear energy shall issue regulations concerning the following:

- 1) the conditions for siting, construction, pilot operation, startup and use of nuclear facilities (Articles 28, 29, 33 and 43);
- 2) the drafting and content of the safety report and other documentation necessary for ascertaining the safety of nuclear facilities (Article 32);
- 3) the specialized training, experience, testing of knowledge and certificate that personnel working at particular jobs in nuclear facilities meet the conditions (Articles 41 and 42);
- 4) the zones used in the physical balance and the manner of keeping records on nuclear raw materials and nuclear materials as well as on the filing of the data contained in those records (Articles 53 and 54).

The federal administrative agency competent for nuclear energy shall issue the regulation referred to in Subparagraph 1 of Paragraph 1 of this article in agreement with the federal administrative agency competent for health affairs, the federal administrative agency competent for national defense and the federal administrative agency competent for internal affairs.

Article 67

The federal administrative agency competent for agriculture shall issue regulations on the conditions under which livestock feed and raw materials for preparing mixed feeds to be fed to animals and containing radioactive substances over and above the limits set on activity may be distributed and used to feed animals.

Article 68

Administrative agencies competent for internal affairs, within the limits of their rights and duties, are required to aid the agency competent for protection from ionizing radiations or the agency competent for the safety in nuclear facilities, at their request, in carrying out the measures prescribed or specified in accordance with this law.

Article 69

The federal secretary for national defense is hereby authorized, pursuant to the provisions of this law, to prescribe more detailed conditions for the purchase and sale of sources of ionizing radiations and also for the use of sources of ionizing radiations which are used in the Yugoslav People's Army, and also the manner in which those sources shall be supervised.

The official heading the federal administrative agency competent for internal affairs, pursuant to the provisions of this law, is hereby authorized to prescribe the conditions for purchase and sale of sources of ionizing radiations and also for the use of sources of ionizing radiations which are used in law enforcement agencies, as well as the manner of supervising those sources.

V. Punitive Provisions

Article 70

An organization of associated labor or other juridical person shall be subject to a fine of not less than 500,000 and not more than 10 million dinars for an economic violation in the following cases:

- 1) if it collects or treats or stores or discharges or emits radioactive waste into the environment or performs final disposal (containment) of such substance contrary to the manner and conditions specified by regulations enacted on the basis of this law (Article 11 and Article 65, Paragraph 1, Subparagraph 3);
- 2) if it distributes drinking water or food or articles for personal hygiene containing radioactive substances over and above the prescribed limits of activity contrary to the conditions prescribed by this law or regulations enacted on the basis of this law (Article 22 and Article 65, Paragraph 1, Subparagraph 8);
- 3) if in working with sources of ionizing radiations it causes contamination of the environment over and above the prescribed limits or does not carry out

decontamination in the manner specified by this law or regulation enacted on the basis of this law (Article 25 and Article 65, Paragraph 1, Subparagraph 9);

4) if it does not make provision or does not carry out all the measures of physical protection at the site for construction of a nuclear project or at a nuclear facility or at a construction project serving a nuclear facility or part of it and to protect nuclear materials or radioactive waste (Article 58).

The person responsible in the organization of associated labor or other juridical person shall also be subject to a fine of not less than 50,000 and not more than 100,000 dinars for an economic violation for the action referred to in Paragraph 1 of this article.

Article 71

An organization of associated labor using a nuclear facility or other juridical person shall be subject to a fine of not less than 50,000 and not more than 300,000 dinars for a misdemeanor as follows:

1) if it does not conduct systematic testing for contamination of the environment with radioactive substances in its vicinity or does not do that testing according to the program which it has adopted subject to consent of the federal administrative agency competent for health affairs (Article 9);

2) if it does not notify in advance the competent agency in the republic or autonomous province of its intention to permanently cease to use the nuclear facility (Article 12);

3) if without prior approval of the agency designated by the republic or provincial statute it purchases or sells or uses radioactive substances over and above the prescribed limit of activity or uses X-ray machines or other devices which produce ionizing radiations (Article 14);

4) if it conducts systematic X-ray examinations of persons younger than age 16 or uses sources of ionizing radiations in medicine contrary to the conditions prescribed on the basis of this law (Article 20);

5) if it does not furnish personnel employed at places at which they are exposed to ionizing radiation personal dosimetric and protective devices or does not take all the measures prescribed for protection of those workers (Article 21, Paragraph 1);

6) if it does not have its own department for protection from ionizing radiations or does not have a person responsible for conducting measures for protection from ionizing radiations (Article 23);

7) if it does not supplement a report on the safety of the nuclear facility in accordance with the changes which occur in the design during construction or pilot operation or startup or use or if it permanently ceases to operate the nuclear facility (Article 32, Paragraph 3);

- 8) if it begins construction or commences pilot operation or starts up a nuclear facility without the permission of the competent agency in the republic or autonomous province (Article 38);
- 9) if it assigns to jobs and functions in controlling the production process in a nuclear facility or to jobs and functions of supervision over that process personnel who lack the appropriate specialized training and experience or personnel who do not have a permit for such work (Article 41);
- 10) if it does not provide separate warehouses for nuclear materials and containers which guarantee protection of the environment or it does not guard warehouses in which nuclear materials are stored against the access of unauthorized persons (Article 50, Paragraphs 1 and 3);
- 11) if it engages in the sale of nuclear materials or sells or releases nuclear materials or purchases nuclear materials without the permission of the competent agency (Articles 47 and 51);
- 12) if it does not keep records by zones of physical balances on nuclear materials which it produces, processes, uses or stores or does not file the data from those records with the competent authority (Article 53);
- 13) if it does not act in accordance with an enforceable decision of the competent agency which orders some action or safety measure for protection of the environment against ionizing radiations or for the safety of the nuclear facility as envisaged by this law or regulation enacted on the basis of this law (Article 62).

The person responsible in the organization of associated labor or other juridical person shall also be subject to a fine of not less than 10,000 and not more than 50,000 dinars for a misdemeanor for the actions referred to in Paragraph 1 of this article.

Article 72

An organization of associated labor or other juridical person shall be subject to a fine of not less than 30,000 and not more than 80,000 dinars for a misdemeanor as follows:

- 1) if in a job exposed to ionizing radiations it employs or continues to employ a person who is prohibited from working with sources of ionizing radiations or does not have the prescribed specialized training or does not meet the prescribed health conditions for work with sources of ionizing radiations (Article 16 and Article 17, Paragraph 1);
- 2) if it installs on a residential building or school or other public building intended for the gathering or residence of children and young people or if before expiration of the time for replacement of sources of ionizing radiation it does not remove a radioactive lightning rod from them (Articles 19 and 76);

- 3) if it finds that in a particular area there is irradiation over and above the limits prescribed on the basis of this law or that there exists contamination of radioactive substances and does not immediately report this danger to the competent administrative agency (Article 26, Paragraph 1);
- 4) if it does not keep records on sources of ionizing radiations which it produces, which it sells, which it imports or which it uses or if it does not report every delivery to the competent agency designated by the republic or provincial statute (Article 27, Paragraph 1);
- 5) if it does not file a report with the competent agency containing the data specified in Article 44 of this law.

The person responsible in the organization of associated labor or other juridical person shall also be subject to a fine of not less than 10,000 and not more than 30,000 dinars for a misdemeanor for the actions stated in Paragraph 1 of this article.

Article 73

An organization of associated labor shall be subject to a fine of not less than 30,000 and not more than 80,000 dinars for a misdemeanor if it has been ordered to measure the level of exposure to ionizing radiations and within its activity does not keep records on irradiation of the population or personnel exposed in their work to the effect of ionizing radiations or if it does not file data on irradiation with the specified agencies or organizations (Article 27, Paragraph 2).

The person responsible in the organization of associated labor which has been ordered to measure the level of exposure to ionizing radiations shall also be subject to a fine of not less than 5,000 and not more than 20,000 dinars for a misdemeanor for the actions stated in Paragraph 1 of this article.

Article 74

A person who is self-employed shall be subject to a fine of not less than 30,000 and not more than 80,000 dinars for a misdemeanor if he purchases or sells sources of ionizing radiations or uses them as follows:

- 1) if without prior permission of the agency designated by the republic or provincial statute he purchases or sells or uses radioactive substances above the prescribed limit of activity or uses X-ray machines or other devices which produce ionizing radiations (Article 14);
- 2) if he does not furnish workers employed at places at which they are exposed to ionizing radiations personal dosimetric and protective devices or does not take all the measures prescribed for protection of those workers (Article 21, Paragraph 1);
- 3) if in working with sources of ionizing radiations he causes contamination of the environment over and above the prescribed limit and does not carry out

decontamination in the manner defined by this law and regulations enacted on the basis of this law (Article 24 and Article 65, Paragraph 1, Subparagraph 9);

4) if he does not obey an enforceable decision of the competent authority ordering some action or measure to guarantee protection from ionizing radiations as envisaged by this law or regulation enacted on the basis of this law (Article 62).

Article 75

An individual working with sources of ionizing radiations shall be subject to a fine of 2,000 dinars for a misdemeanor if in the course of work he does not submit to a medical examination within the stated interval or does not use personal and other protective devices (Articles 17 and 21).

The authorized personnel of the agency competent for surveillance in conducting inspections at places where work is done with sources of ionizing radiations are hereby authorized to establish the misdemeanor referred to in Paragraph 1 of this article and pronounce the penalties.

VI. Transitional and Final Provisions

Article 76

Radioactive lightning rods installed before the day when this law takes effect on school and other public buildings intended for the use of children and young people must be removed from those buildings before expiration of the period of time for replacement of sources of ionizing radiations.

Article 77

The competent administrative agencies are required to issue the regulations referred to in Articles 65, 66 and 67 of this law within 1 year from the date when this law takes effect.

Article 78

The Law on Protection From Ionizing Radiations (SLUZBENI LIST SFRJ, No 54, 1976) shall cease to be valid on the day when this law takes effect.

Regulations enacted on the basis of Article 30 of the Law on Protection From Ionizing Radiations (SLUZBENI LIST SFRJ, No 54, 1976) shall cease to be valid on the day when the regulations take effect which are to be enacted on the basis of Article 65 of this law, but no later than 1 year from the date when this law takes effect.

Article 79

This law shall take effect on the eighth day after publication in SLUZBENI LIST SFRJ.

7045
CSO: 2800/131

YUGOSLAVIA

DRAWBACKS OF FRAGMENTATION OF RAIL SYSTEM ANALYZED

Findings of Study

Belgrade NEDELJNE INFORMATIVNE NOVINE in Serbo-Croatian No 1761, 30 Sep 84
pp 14-15

[Text] At the request of the International Bank, Dekonsult, a foreign research institute, did a study on the productivity level of our railroads which indicates that fragmentation of the Yugoslav railroad system has created frightful consequences and reduced productivity by at least 30 percent.

When discussions were held in 1978 between the Community of Yugoslav Railroads [CYR] and the International Bank for Reconstruction and Development (now the World Bank) on conditions for obtaining six loans of approximately \$100 million requested to modernize our railroad system, the International Bank, not adequately convinced by our arguments that we really needed new electric locomotives, put as a condition for issuing the loan that 0.5 percent of loan funds were to be used for studying how efficiently the existing 340 locomotives were being used. After this condition was accepted--it coincided with the needs of the railroad anyway--international bidding was announced in 1981 in which Dekonsult, the consulting firm for the West German railroads, was awarded the assignment of doing a study to determine why the 340 electric locomotives owned by the Yugoslav Railroads have such a low level of operational productivity, being used at only 70 percent of capacity. With the help of the Kirilo Savic Railroad Institute in Belgrade and the Transportation Institute of the Sarajevo Railroad Transport Organization, Dekonsult recently completed a detailed study consisting of over 1,000 pages, which has just been translated at the CYR so that it can be given to the Railroad Transport Organizations [RTOs] of Belgrade, Novi Sad, Sarajevo, Skopje, Titograd, and Zagreb--for whom this study was carried out--for inspection. A special commission of the CYR, formed to implement and carry out this study dealing with the low utilization rate of electric locomotives by the Yugoslav railroad system, has already informed the CYR and six RTOs that is considers the study to be quite successful and "in line with our efforts," at the same time, however, warning the six railroad transport organizations that Yugoslav Railroads "have certain problems to deal with" in connection with this study.

Acceptance of this study--and no one disputes that it has to be accepted--would obligate Yugoslav Railroads to carry out its proposals, conclusions, and

suggestions (since this is the condition the International Bank gave in order to approve the loan of \$100 million); however, considering the way things really are in our country--that is, the existence of "great obstacles in the joint agreement process in RTOs," as well as the announced intentions of the Novi Sad and Titograd RTOs to make investments which are directly opposed to the study's conclusions--would seem to indicate that the probability is great that the Yugoslav railroads will continue to operate as they have operated up to now--in a way contrary to common sense and economic precepts. Of course, the last few words of this sentence are not literally to be found in the report of the Commission for Implementing the Study, but can be read between the lines.

What Do the Germans Want?

In short, they propose that Yugoslav Railroads be organized like any large system, that it utilize its capacities to the fullest extent, and that it not throw away hundreds of millions of dinars every day.

Dekonsult researchers, based on their examination of the situation regarding the Yugoslav Railroads and using the experiences of all European railroads (both "Eastern" and "Western"), propose that rather than have Yugoslav electric locomotives serviced in ten different repair shops, only one of which is technically oriented (the Zagreb RTO facility), all locomotives should be dispatched to just three terminals (in Zagreb, Sarajevo, and Belgrade) in the future; in addition, maintenance services would be set up in Zagreb and minor repairs and inspections in the other two depots. In order to do all this without disrupting economic relationships which have been established between the eight RTOs in Yugoslavia, the authors of the study propose that a joint pool be created (a cooperative community for servicing all Yugoslav electric locomotives) which would also have within its structure a joint central warehouse for spare parts. This pool would be organized on the basis of agreements between all RTOs with regard to coordinated interests and financial considerations.

Enormous savings would be realized in repair time, costs, and labor with this sort of repair and maintenance organization for Yugoslav electric locomotives.

Claiming that the independence of the eight republic and provincial RTOs would not be threatened in any way by this centralization, the authors of the study cite examples of a large number of similar railroad pools in Europe as well as pools consisting of virtually all European national airline companies which maintain their airplanes in joint service facilities.

Using the most pessimistic estimates, the authors of the study claim that savings in maintenance would be reduced by at least one-third in comparison to the enormous repair and maintenance expenses incurred in the past in the ten Yugoslav terminals (additionally, Novi Sad and Titograd are investing directly in the construction of three new terminals).

In order to improve the operational productivity of Yugoslav locomotives by at least 30 percent--and that of the railroads at the same time--the authors of the study propose that a pool also be established for the utilization of

locomotives. It is generally known that locomotives in our country today usually only run from one basic organization of associated labor (of which there are approximately 40 in the country) to another, although optimum utilization of electric locomotives and common sense would dictate that one locomotive be used to pull a freight train from the beginning of a run to the end.

"A utilization pool would be set aside for the RTO cooperative organization for the joint usage of electric locomotives in order to achieve optimal productivity," according to the study. "All the electric locomotives of all RTOs would have to be placed at the disposal of the pool, along with compensation for performance of the jobs carried. RTOs would continue to be the owners of the locomotives, but the pool would use them only on the basis of optimal productivity, and plans dictating order of use would be drawn up jointly in the pool without taking into consideration to whom a given locomotive belonged; in this way losses due to empty runs would be reduced, and the locomotives would be able to operate to the fullest extent."

(Thus, a common occurrence today in large railway centers in Yugoslavia is that half a dozen freight trains sit waiting in the stations because there are not enough locomotives, and half a dozen trains wait outside the stations unable to enter because there is not enough free track).

Discretionary Privilege

Among the conclusions made by the study is this one: "Research on utilization and maintenance of electric locomotives indicates that the inadequate availability and poor productivity of these locomotives originated primarily because of fragmentation of maintenance organization and limitation of usage. The fact that every RTO uses their locomotives at their own discretion leads to unproductive use of the locomotives for long periods of time and to the maintenance of large reserves."

Instead of purchasing new locomotives, as a few Yugoslav RTOs had planned to do, the authors of the study guarantee that with the reorganization of Yugoslav Railroads in the area of servicing and utilizing locomotives alone, approximately 90 locomotives (of a total of 340 that we now have) would be saved.

For the authors of the study, the enormous number of managers and administrative workers in our railroad is incomprehensible. They mention this phenomenon on just about every page of the study, using, of course, the customary diplomatic terminology of consultants, such as, "supervision of expenses in staffing offices is recommended," or "we advise that great savings can be found in reducing the unusually large number of clerks at the terminals," etc. Moreover, the authors of the study say that they did not have the opportunity to visit all the more important railroad centers, and even at those places which they did visit they did not have all the necessary data at their disposal. This is undoubtedly true because from one other report (from CYR sources) it is apparent that a smaller number of clerks at some railway stations was intentionally reported to the authors of the study than actually worked at them, allegedly for security reasons.

Climate

It was not our intention to go into technical details, nor to retell the contents of the four large volumes of the study. The goal of this article was to help the effort of the railroad workers to achieve--using this study as an example--public support for a claim which all experts working for the Yugoslav railroad system have been making for many years--that the existing organization of Yugoslav Railroads, not only because it is not Yugoslav, but because it corresponds neither to the interests of the region nor to provincial or republic interests, is opposed to the interests of everyone.

Perhaps this study, when it reaches the ministers' desks, will help in the new climate brought about by resolutions of the 13th Congress and the Stabilization Program to begin finally to change things in the railroad, not in the direction of depriving the sovereignty of the railroad to our republic and provincial governments, but in the direction of making the use of this sovereignty rational.

At a meeting of the Commission of the Central Committee of the Serbian LCY held recently to deal with the development of relations between nations, it was mentioned that identifying development of relationships between nations with the sovereignty of "national economies" is a serious mistake. Sovereignty of a nation and a nationality, and national equality, cannot be proved exclusively by the existence of republic forges, refineries, sugar refineries, railroads, etc. This leads, it was said, "to the division of social property along with the powerful process of dependence of associated labor on the centers of political decisionmaking and government authority."

Can this study be part of the material evidence for the stern indictment of the distortions of our system?

Fate of Text

Belgrade NEDELJNE INFORMATIVNE NOVINE in Serbo-Croatian No 1761, 30 Sep 84
pp 14-15

[Text] When Dekonsult, the Frankfurt Institute for German Railways, had completed its voluminous study after 1½ years of work and had packed it into four separate volumes--printed in 12 copies--it sent the books, as agreed upon, by post to the address of the Community of Yugoslav Railroads.

These books were retained at our country's border. Customs required the Community of Yugoslav Railroads to pay a tariff of 700,000 marks--how much did this study cost!? From the community came the argument that the books were not goods but that they contained "knowledge," and that there was no reason for paying the tariff. After all, the community did not have a cent for paying this tax. Be that as it may, after 4 weeks customs wrote off the study and sold it--to the junk heap!

The Refuse Manager in Pancevo, who bought the study along with other old papers, looked it over and figured that someone might be able to use it. Since

a photograph of a locomotive was on the title pages of all four volumes (12 copies each), it seemed natural to the Refuse Manager to telephone the Community of Yugoslav Railroads and to offer to sell it his goods. Thus, the Community of Yugoslav Railroads managed finally to obtain the study for the price of old paper, for which it had already paid dearly.

When we in the Community of Yugoslav Railroads verified this improbable story, we were told that it was true to the letter, but to consider "whether it was appropriate" to make the story public. Is it appropriate?

9548

CSO: 2800/111

YUGOSLAVIA

ATTEMPT TO INTEGRATE TRANSPORTATION SYSTEM

Belgrade EKONOMSKA POLITIKA in Serbo-Croatian 17 Dec 84 pp 24-25

[Text] Following several years of debate and--since 1982--several missed deadlines, the Social Compact on Development of Integrated Transportation will be signed in the Economic Chamber of Yugoslavia in late December (on the 21st of this month to be precise). The obligation of implementing the some 30 provisions of this document will thereby be taken over by the Federal Executive Council, the Federation of Yugoslav Trade Unions, the Economic Chamber of Yugoslavia, and the republic (provincial) executive councils and economic chambers. In the article which follows we offer readers not only a brief survey of that document's content, but also a few elements for drawing conclusions concerning the reasons for its adoption and the prospects for its implementation.

We should immediately note that the Social Compact on Integrated Transportation has been conceived as a step toward operationalizing the Agreement on Transportation Policy, adopted 7 years ago, and the postulates of the Long-Range Economic Stabilization Program in the Transportation Sector. Its concretization is to follow afterward in next year's enactment of a number of self-management accords. All these documents, stated in the most general terms, are an expression of the effort to make the fragmented and inefficient transportation system more efficient and cheaper, that is, to prevent "expanded reproduction" of that system's inefficiency.

According to the findings of the Transportation Economics Institute as of the beginning of this year, transportation costs had a share of about 10 percent in the cost price of Yugoslav goods in 1970, and 10 years later that share had climbed to about 17 percent. The burden of transportation costs on the goods of the industrially advanced countries is between one-third and one-half as much. This discrepancy (indeed the widening of this gap) is the consequence, put most succinctly, of the fact that the rising prices of liquid fuels over the past decade have not redirected Yugoslav freight transport toward cheaper forms of transportation to any essential degree. If we omit air and maritime cargo transport, the share of trucking is 89 percent, the railroads 9 percent and river transportation only 2 percent. The most expensive form of transportation, then, is covering by far the largest portion of needs, and the cheapest has unquestionably the smallest share. It is obvious that the inefficient distribution of traffic is still more unfavorable, since the share of public

carriers in total trucking is only 26 percent. Most of the traffic is carried in vehicles owned by the users of the transportation services, that is, by producer work organizations.

The Causes of Inefficiency

The situation we have described is not, of course, an accident. It is a consequence mainly of the postulates of the transportation policy in effect and then also of the relations which constitute the framework of overall economic development. The relations in primary distribution have for years left work organizations in transportation activities with practically no opportunity to develop their facilities to keep pace with the growth of the transport needs of users of their services. Moreover, the question of the development of the permanent infrastructure (roads, railroad track, and riverports, seaports and airports)--which ought to be (and is) one of the essential parameters for projecting the development of transport facilities--has been dealt with in a way dictated by regional needs and the financial capabilities of those regions, rather than by an awareness that a system (any system, so it applies to transportation) cannot develop piecemeal.

These divisions are probably easiest to recognize if we take the Yugoslav Railroads as an example. The Jesenice--Djevdjelija main line carries approximately 70 percent of total rail traffic, but the investments in its modernization and reconstruction are absolutely out of proportion to its function. Considerably more resources are being invested in other routes which are secondary from the standpoint of the overall system of the Yugoslav Railroads. Which is why there are about 90 changes of speed on this route, and ultimately form the same reasons there are about 80 points on the entire network of the Yugoslav Railroads where locomotives are changed and about 360 OOUR's [basic organization of associated labor] with powers which are practically impossible to fit into a maximally efficient system of rail transport.

The combination of these two factors--i.e., restriction of the possibilities for development of public carriers because of (depressed) rate policy and the powers of sociopolitical communities with respect to financing the infrastructure (and the losses incurred because of differences between the actual cost of transport and the approved rate)--could not have produced anything other than an increased discrepancy between the capabilities of public carriers and the economy's need for transport. Viewed from this angle, the development of internal transportation systems within economic organizations is actually a necessity. That is, it necessarily had to produce the absurdity where in spite of the sizable investments in overall transportation (that is, in both public and "private" carriers together, on which at present there are no very precise figures), the transportation system is inefficient, and transport costs are excessively high in the final prices of goods in spite of the depressed rates of public carriers.

The Social Compact

Under present circumstances it is obvious that the only way to develop integrated transportation, that is, to organize a more efficient transportation

system, is to build exclusively on preferential development of public carriers combined with discouragement of the growth of intermediate phases in the transportation process. The question is the degree to which the proposed version of the compact which will soon be adopted takes that principle as its point of departure. Judging by length (and treatment) the most important part of this document consists of the provisions whereby the signatories commit themselves to designing a network of freight transport centers, that is, to set forth uniform criteria on the basis of which such centers will be located. On the basis of what we know now, there might be about 25 such points in Yugoslavia at the present moment (and under present circumstances). Their purpose, the compact states, is to collect outgoing freight and distribute incoming freight to meet the needs of their respective areas, that is, to perform all functions related to organizing unified large-scale transport. In a second group of provisions the compact deals with investments to develop integrated transportation. Equipment for these purposes would be imported at lower tariff rates, a portion of the income invested or pooled for investment in integrated transportation would be exempted from republic taxes and contributions, integrated transportation projects would have priorities in obtaining credit financing and in borrowing abroad, etc. Finally, a third group of provisions in the compact has to do with the treatment of transportation costs in the economy. That is, the signatories are committed to devising a methodology for monitoring and tabulating transport costs (domestic and foreign, by organizations incurring them, and by types), and investors are likewise committed to rounding out investment programs to include transportation projects to meet the needs of the project being built.

Limited Scope

There is no dispute that the freight transport centers are a condition for organizing the most favorable, that is, the cheapest and fastest, transportation by public carriers with the available capacity of the infrastructure and transportation equipment. It is also indisputable that they might also be an important instrument for exerting pressure, first, toward changing the present unfavorable distribution of freight traffic among the branches of transportation, and then also toward more rapid introduction of more up-to-date forms of transportation, combined with the application of uniform standards, which would be brought into conformity with the demands imposed by the international market for transportation services. The basic question, however, is the way in which that system of freight transport centers will be set up and developed. It is difficult to take the solution to this problem offered by the compact without expressing reservations. It is a fact that the compact has first of all designated the republics and provinces as the entities responsible for defining and financing that network. They will ultimately reach agreement "on the basis of scientific knowledge and practical experience."

If one is to judge by the way in which the overall transportation system and its individual parts has developed to date, one can hardly evaluate this solution as promising and effective on the face of it. That is, in all the analyses made to date as a rule it is precisely the powers of sociopolitical communities with respect to decisionmaking on the conditions for business operation and especially for investment in the capital infrastructure and transportation

facilities of public carriers which have been referred to as the principal reason for the fragmented and inefficient transportation system. Or, put otherwise, the question is how realistic it is to expect that the present method of decisionmaking will result in effective establishment of a (more comprehensive) system of integrated transportation when the exercise of practically the same kind of decisionmaking concerning development of the individual parts of that system (rail, highway and others) has indisputably proven to be an essential factor for disintegration and the overall inefficiency of Yugoslav transportation.

This doubt is only heightened by the rough estimates (it is not possible to make precise calculations) of the size of changes in freight flows that "integration of the transportation system" might possibly bring about. It is a fact, for example, that about 42 percent of Yugoslavia's total visible foreign trade takes place with the Danube countries, yet only 6 percent of that trade goes by the most logical route--the Danube. There are, of course, quite a few such examples, and it is impossible (and unnecessary) to cite them here. The essential thing is that behind precisely that kind of transportation, which is obviously inefficient, there stand someone's specific interests; in the framework of that system those interests will not go away, but will thereby figure as points of the fiercest resistance to establishment of the imagined system of integrated transportation.

At the same time, the changes that would, first, provide transportation by all public carriers the conditions for business operation on economic principles, and second, that would compel work organizations in the economy (the users of services) to lower the final prices of their products and the transport costs they contain, have essential importance. Under present circumstances transportation by public carriers, then, has no particular interest in improving the quality of its performance, since concern about its rates, losses and reproduction has been taken over by society (sociopolitical communities), and the economy, that is, the users of transport services, are in a situation where practically any price is granted them (again through the administrative setting of prices, through the coverage of losses, guaranteed markets, etc.). In other words, the present disintegration of the transportation system is a consequence and one of the reflections of disintegration of the economic system as a whole. That is why its integration can hardly be the subject matter of a social compact however much it might be supported and hailed.

7045

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